

TRANSCRIPT OF RECORD

Supreme Court of the United States

OCTOBER TERM, 1933

No. 582

**ELECTRICAL FITTINGS CORPORATION, JOSELSON
SALES CORPORATION, SAMUEL JOSELSON AND
BELLE JOSELSON, PETITIONERS,**

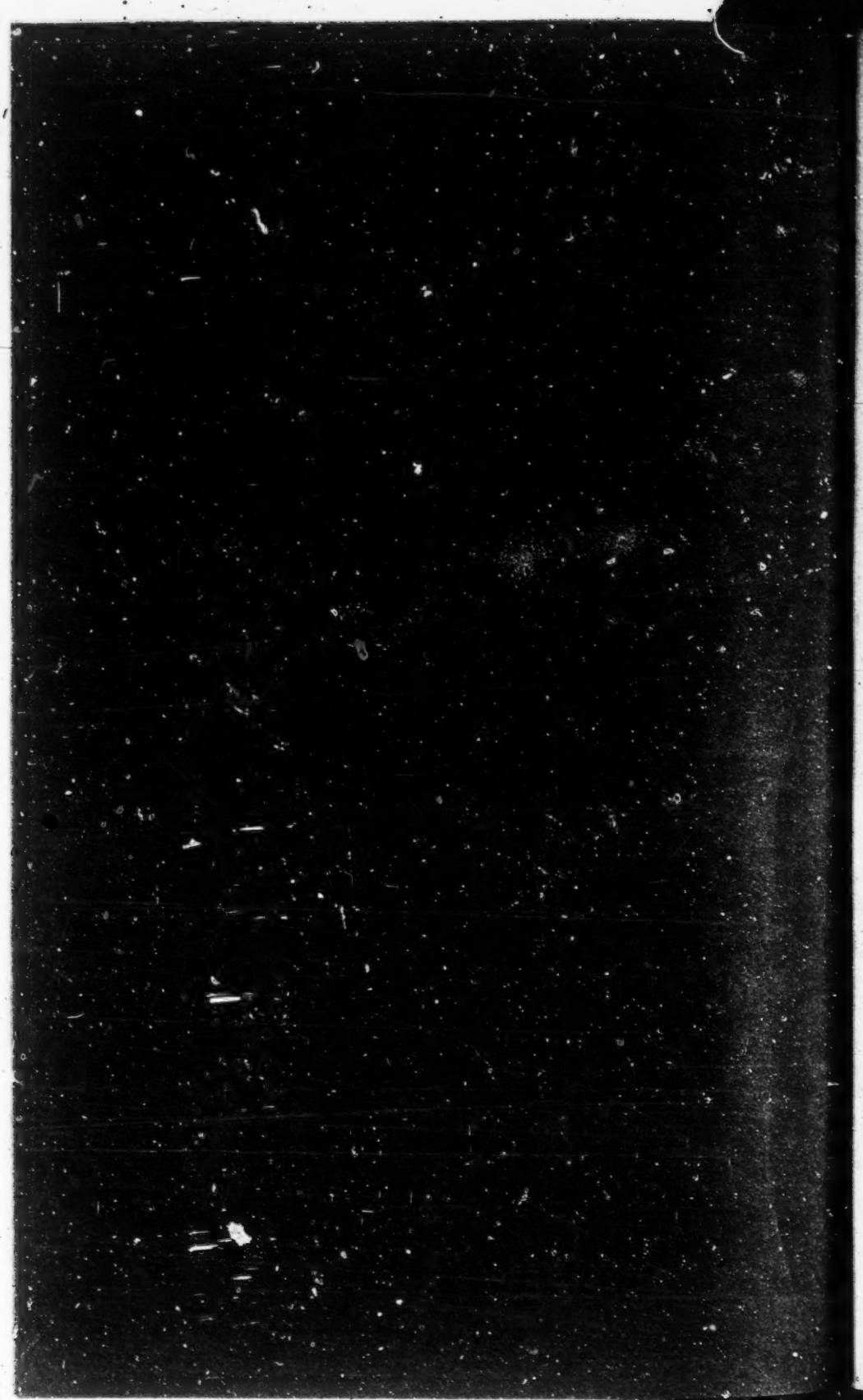
vs.

**THE THOMAS & BETTS CO. AND NATIONAL ELEC-
TRICAL PRODUCTS CORPORATION**

**ON WRIT OF CERTIORARI TO THE UNITED STATES CIRCUIT COURT
OF APPEALS FOR THE SECOND CIRCUIT**

PETITION FOR CERTIORARI FILED JANUARY 11, 1939.

CERTIORARI GRANTED FEBRUARY 13, 1939.



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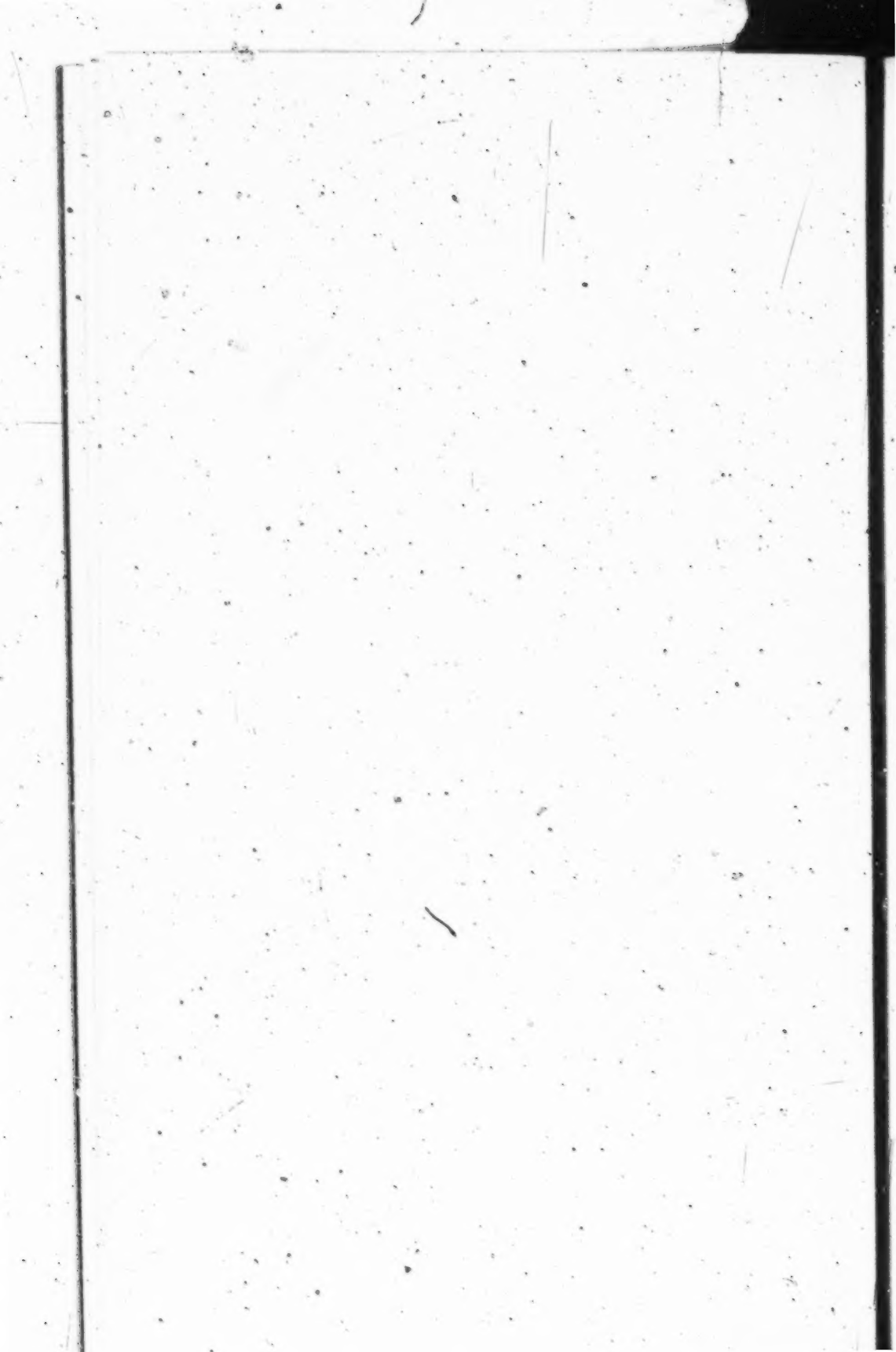
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United States District Court

FOR THE SOUTHERN DISTRICT OF NEW YORK.

1

THE THOMAS & BETTS Co., a corporation,
and NATIONAL ELECTRIC PRODUCTS COR-
PORATION, a corporation,

Plaintiffs,

vs.

ELECTRICAL FITTINGS CORPORATION, a cor-
poration, JOSELSON SALES CORPORATION,
a corporation, SAMUEL JOSELSON and
BELLE JOSELSON, individually,

Defendants.

Equity No.
81-229.

U. S. Letters
Patent to
Fullman No.
1,769,947.

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Bill of Complaint.

The plaintiffs, for their Bill of Complaint, allege:

1. That the plaintiff, The Thomas & Betts Co., is now
and at all times hereinafter mentioned was, a corpora-
tion duly organized and existing under, and by virtue of
the laws of the State of New Jersey, having its principal
office and place of business in the City of Elizabeth,
County of Union and State of New Jersey.

3

2. That the plaintiff, National Electric Products Cor-
poration is now, and at all times hereinafter mentioned
was, a corporation duly organized and existing under and
by virtue of the laws of the State of Delaware, having
its principal office and place of business in the City of
Pittsburgh, County of Allegheny and State of Pennsyl-
vania.

3. That the defendants, Electrical Fittings Corporation,
and Joselson Sales Corporation, are now and at all times
hereinafter mentioned were, corporations duly organized
and existing under and by virtue of the laws of the State

of New York, each having a place of business at 27 Warren Street, in the Borough of Manhattan, City, County and State of New York, in the Southern District of New York, within which district the acts herein complained of have been committed; and that Samuel Joselson and Belle Joselson, his wife, defendants, have an office and place of business in the Borough of Manhattan, City, County and State of New York, in the Southern District of New York, within which district the acts herein complained of have been committed.

5

4. That this suit is based upon United States Letters Patent 1,769,947 entitled Connector for Electrical Conduits issued July 8, 1930, to National Metal Molding Company of Pittsburgh, Pennsylvania, a corporation of Pennsylvania, as assignee of James M. G. Fullman, which Letters Patent was subsequently assigned to National Electric Products Corporation, plaintiff, and under which The Thomas & Betts Co., plaintiff, is the exclusive licensee of said National Electric Products Corporation, as will hereinafter more fully appear, and is brought under the patent laws of the United States.

6

5. That on or prior to the 26th day of July, 1928, James M. G. Fullman, then of Sewickley, Pennsylvania, was within the meaning of the Statutes of the United States then in force, the first, sole, true and original inventor of certain new and useful improvements in Connector for Electrical Conduits, not known or used by others in this country and not patented or described in any printed publication in this or any foreign country before his invention or discovery thereof, or more than two years prior to his application for Letters Patent therefor, and no application for any foreign patents having been filed more than twelve months prior to the filing of the application for Letters Patent in this country, and which improvements

Bill of Complaint.

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had not been in public use or on sale in the United States for more than two years prior to his said application for Letters Patent therefor, and not abandoned to the public.

6. That on the 26th day of July, 1928, the said James M. G. Fullman made and filed an application in writing to the Commissioner of Patents of the United States for the grant of Letters Patent upon the said invention for said improvements in Connector for Electrical Conduits; that on the 8th day of July, 1930, all of the requirements of the Statutes of the United States then in force having been duly complied with, Letters Patent of the United States numbered 1,769,947 for Connector for Electrical Conduits was duly granted on said application to National Metal Molding Company, assignee, of Pittsburgh, Pennsylvania, the said James M. G. Fullman having by an instrument in writing assigned to said National Metal Molding Company, assignee, his entire right, title and interest in the invention described in said application aforesaid, which assignment was on July 26, 1928, duly recorded in the Transfers of Patents of the United States Patent Office at Liber T 135, Page 151, and requested the Commissioner of Patents to issue the Letters Patent to National Metal Molding Company, as assignee; and the said Letters Patent were so issued after due examination as to the novelty, patentability and utility of the invention therein described and payment of the fees required by law; that said Letters Patent granted to the said National Metal Molding Company and to its successors or assigns for the full term of seventeen years from the date thereof the exclusive right of making, using and selling the invention and improvements set forth, described and claimed therein throughout the United States and territories thereof, which Letters Patent, or a duly certified copy thereof plaintiffs will produce as this Court may direct.

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9

7. That after the issue of said Letters Patent 1,769,947 dated July 8, 1930, and prior to the infringement herein complained of, the said National Metal Molding Company, aforesaid, duly assigned said Letters Patent 1,769,947 to National Electric Products Corporation, plaintiff, which assignment was, on July 16, 1930, duly recorded in the Transfers of Patents of the United States Patent Office in Liber W 144, at Page 496; and that said National Electric Products Corporation was, at the time of the infringement herein complained of, and is at the present time, vested with the entire right, title and interest in and to said Letters Patent except for an exclusive license heretofore granted under said Letters Patent to The Thomas & Betts Co., its co-plaintiff herein, and certain sub-licenses heretofore granted by the said The Thomas & Betts Co., plaintiff, as will hereinafter more fully appear, to manufacture and sell devices embodying the improvements and inventions covered by said Letters Patent, which exclusive license was, on November 25, 1933, recorded in the Transfers of Patents of the United States Patent Office in Liber D 158, at Page 519; a certified copy of said assignment, and exclusive license aforesaid, plaintiffs will produce as this Court may direct.

8. That since National Electric Products Corporation, plaintiff, and The Thomas & Betts Co., plaintiff, became the owner and exclusive licensee, respectively, of said Letters Patent and invention aforesaid, they have been in constant and exclusive exercise of all the rights and privileges therein granted and that these defendants have interfered with the business of these plaintiffs by the infringement of which complaint is herein made; that said invention has been of great benefit to plaintiffs and to the public; and that plaintiffs have expended large sums

Bill of Complaint.

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of money developing the aforesaid invention with the aid of certain sub-licensee companies of the plaintiff, The Thomas & Betts Co., exclusive licensee, to wit:

The M. B. Austin Company—of Chicago, Illinois, a corporation of Illinois,

The Rattan Manufacturing Company,—New Haven, Conn., a corporation of Connecticut,

The National Engineering Corporation—of Terryville, Conn., a corporation of Connecticut,

National Electric Products Corporation—Pittsburgh, Pa., a corporation of Delaware,

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Kwikon Company—Chicago, Illinois, a corporation of Illinois,

The Bridgeport Switch Co. of Bridgeport, Conn., a corporation of Connecticut,

Appleton Electric Company—of Chicago, Illinois, a corporation of Illinois,

American Circular Loom Company, Inc.,—New York City, a corporation of Delaware,

Steel City Electric Co.,—Pittsburgh, Pa., a corporation of Pennsylvania,

Conduit Fittings Corporation, Chicago, Ill., a corporation of Illinois,

15

All-Steel Equipment Company,—Aurora, Ill., a corporation of Illinois,

Roach-Appleton Manufacturing Company,—South Bend, Indiana, a corporation of Delaware,

which companies are now, and at all times herein mentioned have been willing and able to fully supply the market with devices described in and/or covered and defined by the claims of the patent in suit; that all of said licensees have recognized and acquiesced in the novelty, utility, value and patentability of the invention covered by said Letters Patent and have acquiesced in the validity

of said Letters Patent; that the exclusive rights of the plaintiffs in respect to said invention and Letters Patent have been generally acquiesced in, acknowledged and respected by the public; and but for the unlawful acts of these defendants, and others acting in collusion with them, plaintiffs would now be in the exclusive enjoyment of the rights and privileges granted by said Letters Patent.

17 9. That, on information and belief, at or about the time of the incorporation of Electrical Fittings Corporation, said corporation bought as a going concern the business previously conducted by Joselson Sales Corporation, and acquired the assets and assumed the liabilities of said Joselson Sales Corporation; that both said corporate defendants are now and at times herein complained of have been managed, financed, controlled, and dominated, by Samuel Joselson, and his wife Belle Joselson, jointly and severally; and that said individual defendants are now the only officers and directors of said corporate defendants.

18 10. That, on information and belief, Electrical Fittings Corporation, Joselson Sales Corporation, defendants, and Samuel Joselson and Belle Joselson, defendants, individually and as officers and directors of said corporate defendants, well knowing the premises and rights secured to these plaintiffs by said Letters Patent, with the intent to injure plaintiffs and interfere with their business and deprive them of the profits derived and to be derived from making, using and selling the said invention, did, within the Southern District of New York, and elsewhere in the United States, subsequent to the grant of said Letters Patent and within six years next preceding the filing of this Bill of Complaint, without the license and consent of said plaintiffs, or either of them, jointly and

severally contribute to the infringement of said Letters Patent aforesaid, and the exclusive rights of these plaintiffs, by manufacturing, using and/or selling cable connectors adapted and intended to be used as illustrated, described and claimed in said Letters Patent aforesaid; that the cable connectors manufactured, used and/or sold by these defendants, in infringement of said Letters Patent, are illustrated by the photostats attached hereto:

QUANTITY 50



SIZE $\frac{3}{8}$

SET SCREW CONNECTORS.

JOSELSON SALES CORPORATION
NEW YORK CITY

20

QUANTITY 50



SIZE $\frac{3}{8}$

SQUEEZE CONNECTORS

JOSELSON SALES CORPORATION
NEW YORK CITY

21

that said defendants are preparing, conspiring, and threatening to continue the infringement of said Letters Patent by continuing the manufacture, use and/or sale of cable connectors, as aforesaid, and thus inflict further injury, damage and loss upon these plaintiffs, but to what extent the defendants have profited or will profit by reason of the aforesaid infringement and/or contributory infringement plaintiffs are, and will be ignorant without an accounting.

- 23 11. That, on information and belief, the plaintiff, The Thomas & Betts Co., and its licensees aforesaid have given due notice to the defendants and to the public generally that the cable connectors made, used and sold by them are covered by the patent in suit, and in addition thereto these defendants have in other ways been fully advised and notified of said plaintiff's exclusive license under said Letters Patent.

Plaintiffs therefore pray:

- 24 (a) For a permanent injunction and a preliminary injunction pending this suit, restraining said defendants, their attorneys, agents, representatives, workmen, clerks, employees and privies, and all others acting by and under their direction of authority, or those in active concert or participating with them from directly or indirectly making or causing to be made, using or causing to be used, selling or causing to be sold, supplying or causing to be supplied, advertising or causing to be advertised, or offering for sale; and from directly or indirectly encouraging or aiding and abetting the manufacture, use, sale, or in any way or manner disposing of connectors for electrical conduits, or any other apparatus or product embodying or employing the inventions

Bill of Complaint.

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described in, or covered and defined by United States Letters Patent Fullman 1,769,947 issued July 8, 1930; or from infringing upon, contributing to the infringement of, or violating the inventions of said Letters Patent in any way whatsoever.

(b) For costs of this suit and for an accounting of profits accrued to defendants, and damages sustained by plaintiffs resulting from said infringement, and that any damages so assessed, may be trebled.

(c) For such other and further relief as the circumstances of the case may require.

(d) That a subpoena *ad respondendum* be issued under the seal of this Court directed to the defendants herein, requiring them to answer this Bill of Complaint, within the time specified by the equity rules, but not under oath, oath to the answer being hereby expressly waived.

THE THOMAS & BETTS Co.,

By (sgd) WM. BOHLEBER,

Attorney. 27

NATIONAL ELECTRIC PRODUCTS CORPORATION,

By (sgd) WM. BOHLEBER,

Attorney.

(sgd) BOHLEBER & LEDBETTER,
Solicitors for Plaintiffs.

(sgd) WM. BOHLEBER,

(sgd) FRANCIS H. FASSETT,

(sgd) JOHN M. MONTSTREAM,
of Counsel.

Bill of Complaint.

State of New York, }
County of New York, } ss.:

WILLIAM BOHLEBER, being first duly sworn on oath, deposes and says:

29 That he is the attorney for The Thomas & Betts Co., one of the plaintiffs herein, and that he makes this verification for and in its behalf, with authority, and for the reason that said plaintiff is a foreign corporation, and has no officer or agent within the State of New York authorized to execute the bill of complaint herein; that he is the attorney for National Electric Products Corporation, plaintiff herein, and that he also makes this verification for and in its behalf, with authority, and for the reason that said plaintiff is a foreign corporation, and has no officer or agent within the State of New York authorized to execute the bill of complaint herein; that he has read the foregoing complaint, knows the contents thereof, and of his own knowledge knows the same to be true except as to matters therein stated on information and belief, and as to these matters he believes them to be
30 true.

(sgd) Wm. BOHLEBER.

Subscribed and sworn to before me this
5th day of October, 1935.

(sgd) · FRANCES McNALLY,
Notary Public.

(Seal)

Answer.

[SAME TITLE]

Defendants, for answer to the bill of complaint herein, or to as much thereof as they are advised is material or necessary to be answered, say:

1. Answering paragraph 3 of the bill of complaint, defendants Samuel Joselson and Belle Joselson deny each and every allegation therein contained. 32

2. Defendants deny each and every allegation contained in paragraphs 5 and 6 of the bill of complaint, save defendants admit having seen what purported to be a copy of Fullman patent No. 1,769,947, granted July 8, 1930, on an application purported to have been filed July 26, 1928.

3. Defendants are uninformed, save by the bill of complaint, as to the matters set forth in paragraph 7 of the bill of complaint and therefore require strict proof with respect thereto. 33

4. Defendants deny each and every allegation contained in paragraph 8 of the bill of complaint.

5. Answering paragraphs 9, 10 and 11 of the bill of complaint; defendants deny each and every allegation therein contained, save that defendants admit the acquisition by Electrical Fittings Corporation of Joselson Sales Corporation.

6. Further answering the bill of complaint, defendants specifically deny infringement of the said patent.

7. Further answering the bill of complaint defendants on information and belief allege that Fullman patent No. 1,769,947 is wholly void and invalid at law and of no legal effect for each of the following reasons:

- 35 (a) Because the alleged invention of said patent was shown and described in printed publications in the United States and countries foreign to the United States before the alleged invention by the patentee and/or more than two years prior to the filing of the application on which said patent issued, as follows:

UNITED STATES PATENTS.

26	Hulburt	276,415	Apr. 24, 1883
	Greenfield	640,758	Jan. 9, 1900
	Goehst & Wilkes	681,416	Aug. 27, 1901
	Klein	799,989	Sept. 19, 1905
	Freeman	848,819	Apr. 2, 1907
	Hinsdill	849,395	Apr. 9, 1907
	Gilbert	949,628	Feb. 15, 1910
	Davis	1,130,483	Mar. 2, 1915
	Appleton	1,192,150	July 25, 1916
	Roux	1,235,926	Aug. 7, 1917
	Webster	1,245,077	Oct. 30, 1917
	Janofsky	1,246,102	Nov. 13, 1917
	Casper	1,279,256	Sept. 17, 1918
	Benjamin	1,345,473	July 6, 1920
	Thomas	1,418,989	June 6, 1922
	Thomas	1,475,524	Nov. 27, 1923
	Perry	1,585,688	May 25, 1926
	Selah	1,597,486	Aug. 24, 1926

and others of whom defendants are not at present advised but beg leave to add hereto by proper amendment when information thereof is obtained.

(b) Because said patent discloses no patentable invention and/or in view of the state of the art at and prior to the time the alleged invention is purported to have been made and as illustrated in the instances thereof referred to in paragraph (a) hereof.

(c) Because the patentee surreptitiously or unjustly obtained the patent for that which was in fact the invention of another who was using reasonable diligence in adopting and perfecting the same, to wit: 38

Otto A. Frederickson, of and at Wethersfield, Conn., as disclosed in United States patent No. 1,687,013, granted October 9, 1928, on an application filed December 7, 1927.

Lewis H. Church, of and at Elizabeth, N. J., as disclosed in United States patent No. 1,787,668, granted January 6, 1931, on an application filed December 27, 1926. 39

Daniel L. Hunter, of and at Houston, Texas, as disclosed in United States patent No. 1,800,348, granted April 14, 1931, on an application filed March 19, 1928.

Lewis H. Church, of and at Elizabeth, N. J., as disclosed in United States patent No. 1,816,667, granted July 28, 1931, on an application filed November 12, 1926.

and others of whom defendants are not at present advised but beg leave to add hereto by proper amendment when information thereof is obtained.

41 (d) Because the alleged invention of the said patent was publicly known to others before the alleged invention thereof by the patentee, or more than two years prior to his application for Letters Patent therefor. Defendants are not at present advised as to the instances of public knowledge but beg leave to add the same hereto by proper amendment when information thereof is obtained.

(e) Because the alleged invention was in commercial use and/or on sale before the alleged invention thereof by the said patentee, or more than two years prior to his application therefor. Defendants are not advised of the particulars of the instances thereof but beg leave to add the same hereto by proper amendment when information thereof is obtained.

42 8. Answering the said bill of complaint, and as a further, separate and complete defense thereto, defendants allege that they are not engaged in the manufacture of electrical fittings but are solely engaged in the resale of electrical fittings acquired from manufacturers thereof; that the connectors sold by them, the sale of which is charged to constitute an infringement of the said Fullman patent in suit, were all acquired from licensees of plaintiffs, jointly or severally, under the said patent in suit, to wit:

Appleton Electric Company of Chicago, Illinois.
Steel City Electric Company of Pittsburg, Pa.
Conduit Fittings Corporation of Chicago, Ill.
Sterling Manufacturing Company of Connecticut.

WHEREFORE defendants deny that plaintiffs, or either of them, are entitled to the relief prayed for, or to any relief, and therefore pray to be hence dismissed with their costs in this cause sustained.

AND defendants further pray for such other and further relief as to the Court may seem just and the circumstances may require.

ELECTRICAL FITTINGS CORPORATION,
a corporation, JOSELSON SALES CORPORATION, a corporation, and SAMUEL JOSELSON and BELLE JOSELSON, individuals, Defendants,

44

By DARBY & DARBY,
Their Attorneys,
Office & Post Office Address,
#405 Lexington Avenue,
New York City, N. Y.

SAMUEL E. DARBY, JR.,
of Counsel.

45

Dated: November 8, 1935.

46

Waiver of Treble Damages by Plaintiffs.

[SAME TITLE]

47

Now comes the plaintiffs in the above-entitled case, the Court consenting, and hereby waive their right to treble damages as prayed for in paragraph (b) of the prayer in the bill of complaint herein; whereupon plaintiffs hereby direct, the Court consenting, that said paragraph be amended as follows, to-wit:

Line 3, change the comma (,) after the word "infringement" to a period (.) and strike the following words, to wit: "and that any damages so assessed may be trebled."

BOHLEBER & LEDBETTER,
Attorneys for Plaintiff.

Dated January 7th, 1936.

It is so ordered.

48

FRANCIS G. CAFFEY,
U. S. D. J.

ACKNOWLEDGMENT.

Service of a copy of the above waiver acknowledged this 7th day of January, 1936.

DARBY & DARBY,
Attorneys for Defendants.

Narrative Statement of the Evidence.

[SAME TITLE]

(A set screw connector identified in interrogatories dated December 23, 1935, propounded by the plaintiffs to the defendants, was offered and received in evidence as Plaintiffs' Exhibit 1.)

(A squeeze connector type identified in interrogatories dated December 23, 1935, propounded to defendants by plaintiffs, was offered and received in evidence as Plaintiffs' Exhibit No. 2.) 50

(Interrogatories propounded by plaintiffs to defendants, and dated December 23, 1935, was offered and received in evidence as Plaintiffs' Exhibit No. 3.)

(Defendants' answers to interrogatories verified February 1st, 1936, filed pursuant to an order dated January 23, 1936, by his Honor, Judge Caffey, were offered and received in evidence as Plaintiffs' Exhibit No. 4.)

(Defendants' further answer to interrogatories verified February 8, 1936, correcting certain of the answers given in Plaintiffs' Exhibit No. 4, were offered and received in evidence as Plaintiffs' Exhibit No. 5.) 51

(Plaintiffs' motion, dated March 23, 1936, for an order on defendants to furnish further and better particulars of the matters stated in paragraph 8th of their answer, was offered and received in evidence as Plaintiffs' Exhibit 6.)

(Defendants' bill of particulars dated April 21, 1936, was offered and received in evidence as Plaintiffs' Exhibit No. 7.)

(A certified copy of United States Letters Patent to Fullman, 1,769,947, in suit, assigned to the National Metal Molding Company, and granted July 8, 1930, was offered and received in evidence as Plaintiffs' Exhibit No. 8.)

(A certified copy of an assignment dated July 14, 1930, by which the National Metal Molding Company assigned the patent in suit to National Electric Products Corporation, one of the plaintiffs herein, said assignment being recorded July 16, 1930, in Liber W-144, Page 496 of the Transfer of Patents of the United States Patent Office, was offered and received in evidence as Plaintiffs' Exhibit 9.)

53 (A certified copy of an exclusive license agreement, dated November 16, 1933, between National Electric Products Corporation, plaintiff and the Thomas & Betts Co., Inc., co-plaintiff herein, said agreement being recorded November 25, 1933, in Liber D-158, Page 159 of the Transfer of Patents of the United States Patent Office, was offered and received in evidence as Plaintiffs' Exhibit 10.)

(A certified copy of the certificate of incorporation of Joselson Sales Corporation, the defendant, a corporation of New York, filed with the Secretary of State of New York on February 8, 1933, was offered and received in evidence as Plaintiffs' Exhibit No. 11.)

54 (A certified copy of the certificate of incorporation of Electrical Fittings Corporation, defendant, a corporation of New York, filed with the Secretary of State of New York on June 3, 1935, was offered and received in evidence as Plaintiffs' Exhibit 12.)

ADNAH MCMURTRIE (837 Ramapo Way, Westfield, New Jersey), called as a witness on behalf of the plaintiffs, being duly sworn, testified as follows:

My name is Adnah McMurtrie; I live at 837 Ramapo Way, Westfield, New Jersey; my age is 65; I am secretary of the Thomas & Betts Co., a New Jersey corporation, one of the plaintiffs in this suit. I have been connected with the Thomas & Betts Company since its organization in 1917, but with its predecessors from about July, 1898. Briefly the business of the Thomas & Betts Company is the manufacture and sale of small electrical specialties and fittings for the installation of electrical work in buildings. Since my connection with the plaintiff company and its predecessors in interest I have the ordinary duties of a secretary of a corporation. In addition I am in charge of the different contracts, of patents and legal matters of the corporation, although I am not an attorney.

The Thomas & Betts Company has granted to others licenses to manufacture and sell cable connections like those covered by the patent in suit. I have brought a memorandum with me giving the names and addresses of all the present licensees of the patent in suit.

The Court: You may use it to refresh your recollection.

The Witness: It is quite a list. The M.-B. Austin Company of Chicago, Illinois; the Rattan Manufacturing Company of New Haven, Connecticut; Andrew Terry Company, formerly the National Engineering Corporation, of Terryville, Connecticut. I have some pencil memoranda on this, and I will try to make it clear to you. The Quick-

On Company of Chicago, Illinois; Bridgeport Switch Company of Bridgeport, Connecticut; Appleton Electric Company of Chicago, Illinois; Steel City Electric Company of Pittsburgh, Pennsylvania; Conduit Fittings Corporation of Chicago, Illinois, who succeeded the Chicago Steel Tank Company of Chicago, Illinois.

The Chicago Steel Tank Company had a license under the patent in suit at one time, and that is also true with respect to the National Engineering Corporation, the Reco-All Steel Co., who succeeded the All Steel Equipment Company of Aurora, Illinois, and the Appleton Manufacturing Company of South Bend, Indiana. Both of them had licenses at one time.

By the Court:

Q. How many does that make altogether?

The Witness: Nine in existence today. I have got to clarify this memorandum for your clerk, I think.

Although there are twelve stated on page 5 of the bill of complaint, the American Circular Loom Company had gone out of business, the corporation dissolved. That is one of those.

60 The Reco-All Steel Company took the place of two licenses. That makes one extra. The Sterling Manufacturing Company was cancelled on May 10, 1933. The Midwest Electric Company of Chicago was cancelled on May 10, 1933.

The National Electric Products Company had a license at one time.

We now have the Austin Company, the Rattan Manufacturing Company and the National Engineering Corporation, now the Andrew Terry Company of Terryville. The National Electric Products Corporation license has been cancelled. There are also the Quick-On Company of Bridgeport, and the Appleton Electric Company. The

American Circular Loom Company has been dissolved. There are also the Steel City Electric Company and the Conduit Fittings Corporation, successor to the Chicago Steel Tank; and the Reco-All Steel.

The All Steel Equipment Company license has been taken over by a combination of the Reco-All Steel Company that took over the license, also the Roach-Appleton. You see that is a combination of Roach and Appleton. The Roach-Appleton is combined into the Reco at the present time. That is all of them.

The license to Sterling Manufacturing Company was cancelled May 10, 1933. I am familiar with the device described in and covered by the patent in suit 62

Q. I hand you a copy of the patent in suit and ask you as a practical man in the art to state to the Court briefly the invention illustrated, described and claimed therein.

Mr. Crews: If your Honor please, I think the witness should state his qualifications to testify as an expert.

The Court: Sustained.

Q. Mr. McMurtrie, please state your qualifications for testifying as a practical man in the art. A. I am a graduate electrical engineer and— 63

The Court: Of what institution?

The Witness: Lafayette, some years ago. I also graduated from a bench in a machine shop. I have been an inspector of electrical installations for the City of New York.

Q. For how long? A. Well, I was there from 1895 or 1896 to the latter part of 1898, around the middle of 1898.

I have had issued to me for electrical devices probably 25 patents, small electrical devices. I have been engaged in the manufacture of such devices, designing of them and manufacturing them from 1901 or 1902 to date.

The Court: What did you have to do with the manufacture of the devices which have been made by the plaintiff company under this patent?

The Witness: I installed the plant, or the plant was installed under my superintendence, our own manufacturing plant, and it was equipped under my supervision.

The Thomas & Betts Company normally employ a maximum of about 500 people. Today we are employing around, I should say, 350.

Q. Now, I will repeat the question, and I hand you a copy of the patent in suit and ask you as a practical man in the art to explain to the Court briefly the invention illustrated and described and claimed therein. A. May I use the samples I brought with me?

The Court: Yes. You may use those if they are the same as those in evidence.

The Witness: These are the same as those, your Honor.

The Court: Is there any question about them, Mr. Crews?

Mr. Crews: They are substantially the same. I am not sure that they are made by the same company, but they are the same type.

The Witness: They are made by our own company.

The Court: He says they are made by his own company.

Mr. Crews: Yes. They are the same type of thing, I mean.

The Court: Yes. All right. There has not been a box such as the one he is working on now marked in evidence.

Mr. Bohleber: I will identify it, your Honor, as he goes along with his testimony.

The Court: Very well. I think perhaps the record should show that the witness produces—

Mr. Bohleber: An outlet box.

The Court: An outlet box, which will be marked Exhibit 13 for identification. 68

(Marked Plaintiffs' Exhibit No. 13 for identification.)

The Witness: And two lengths of cable.

The Court: And two lengths of cable, which will be marked as Exhibits 14-A and 14-B for identification.

(Marked Plaintiffs' Exhibits Nos. 14-A and 14-B for identification.)

The Witness: And two connectors.

The Court: And two connectors, which the witness states are duplicates of exhibits— 69

Mr. Bohleber: 1 and 2.

The Court: 1 and 2 respectively.

The Witness: And fibre bushings.

The Court: Three fibre bushings, which will be marked Exhibit 15.

(Marked Plaintiffs' Exhibit No. 15 for identification.)

Mr. Crews: Connectors and bushings will all be marked 15?

The Court: The bushings 15. The witness has removed from the—

Mr. Bohleber: Outlet box.

The Court (Continuing): —the outlet box two—
The Witness: Two knockouts.

The Court: Two knockouts, the size and shape
of a coin.

The Witness: Now, this invention covers the application of the combination of a connector, Fig. 10 in patent in question, placed between an armored cable Fig. 3—that is numeral 3 and numeral 10—this armored cable consisting of a flexibly wound steel tape, beneath which is placed an electrical conductor over which conductor is wound a paper tape, the paper tape being between the steel tape and the insulated conductors, the insulated conductors being numeral 4, the paper tape numeral 5. It is for the purpose of connecting this cable with an outlet box,—one wall is shown in numeral 1,—and retaining in place a fibre bushing, numeral 8, and at the same time permitting it to be inspected or readily seen by an inspector or any other party. The connection is held in the box by the lock-nut numeral 15. The paper 5 is unwound.

The Court: The witness proceeds to physically
unwind it from Exhibits 14-A and 14-B.

Mr. Fassett: Sections of BX cable.

The Witness: When it is unwound the witness shows that where the steel armor has been cut there is a decided burr on the steel. The fibre bushing is then inserted in the space between the armor and the paper.

The Court: All right. I just want to take a look at it before you go to the next point. (Examining.)
Yes.

The Witness: Protecting the soft insulation of the wire from the burr of the steel. Then inserted under the connector—

The Court: Now, let's see; you are using a connector of what type?

The Witness: Set-screw we call it.

The Court: Set-screw?

Mr. Bohleber: Is that right, Mr. McMurtrie?

The Witness: Yes, it is the set-screw type. That is correct.

Mr. Bohleber: Which is now clamping the connector to the armored plate, places it in one of the openings of the outlet box and applies a—

The Court: Set-screw, is that it?

The Witness: Lock-nut.

Mr. Bohleber: A lock-nut.

The Court: Now I want to see where the red bushing is in that assembly.

The Witness: The red bushing is on the inside of the box, your Honor.

The Court: Yes, I see it. It would be more visible by releasing the lock-nut, wouldn't it?

The Witness: Yes, but very often—

Mr. Bohleber: Would it or would it not?

The Court: He says yes.

The Witness: Yes. Now I am taking another cable—

The Court: That will be 14-B.

The Witness: You will see also that there is a burr on that where the saw has cut.

The Court: Yes.

Mr. Bohleber: A burr on the armored cable.

The Court: On the armored cable?

The Witness: Yes, on the armored cable.

The Court: Now he inserts a red bushing and then places it in the connecting 14-B.

Mr. Fassett: In the outlet box, you mean.

The Court: No, in the connector, Exhibit 2, similar to Exhibit 2, then places it in another out-

let in the connecting box, Exhibit 13, and attaches the lock-nut, thus having made use of the two types of connector, and submits the article for the inspection of counsel and the Court.

(The assembled device was thereupon offered and received in evidence as Plaintiffs' Exhibit 16.)

77 Plaintiffs' Exhibits Nos. 1 and 2 are intended to be used to connect to the outlet box, armored cable consisting of insulated copper wires, paper-sheathed, and the steel armor thereof. Another use to which they could be put other than the combination defined by the claims of the patent in suit is that they might be used to connect armored cable without the paper sheath, but it would not be good insulation as when the wires are bent over the sharp points there would not be any bushing to protect them and the insulation would be injured.

The Court: What is that bushing made of?

The Witness: The fibre?

The Court: Yes.

The Witness: It is fibre.

78 I am generally familiar with the commercial practice of various devices employed in connection with the connecting of cables and wires to outlet boxes which was in use prior to the granting on July 8, 1930, of the Fullman patent in suit. They used connectors with mouths similar to the one which I hold in my hand.

The Court: Which will be marked Exhibit 17 for identification.

(Marked Plaintiff's Exhibit No. 17 for identification.)

Q.—How long had that been in use, Mr. McMurtrie? I am referring to—

The Court: Exhibit 17.

Q. (Continuing.) —Exhibit 17. A. You mean the months—connectors with the mouths—

Q. The connector itself. A. The connector itself, about twenty years, maybe thirty.

Q. Will you explain briefly what might be referred to as the problem solved by the invention of the device covered by the patent in suit? A. During the construction of a building where the electrical installation is to be concealed, the installation is put in place before the plastering is done. Prior to the bringing out of this connection the plasterer was compelled by a great many of the inspection departments to leave part of the work unplastered so that when the inspector came along he could remove the cable from the connector to see whether or not the bushing was installed. It was necessary then for the inspector or for the contractor, and very often it was a case of neither doing it, securing the cable to the connector again and then the plaster was put on.

80

(The exhibit which was marked for identification as Exhibit No. 17 was thereupon offered and received in evidence as Plaintiffs' Exhibit 17.)

It is not necessary to remove the lock-nut in the device of the patent in suit in order to make the proper inspection of the device. When cable connectors like those covered by the patent in suit were first put upon the market they were received with great enthusiasm. They replaced practically the old connectors. I mean connectors with the old mouths.

81

The Court: You are referring to Exhibit 17?

The Witness: Yes.

There were no objections to their use by Underwriters Laboratories, or by the fire departments of the various municipalities. They were specified by a great many.

Q. And what about the National Electric Code? When were they specified by that Code?

Mr. Crews: I object, your Honor. This witness has not testified that they were specified by the Code.

The Court: Sustained.

When this invention made its appearance upon the market the National Board of Underwriters specified its use. The book you show me is called the National Electric Code, covering the year 1933, regulations of the National Board of Fire Underwriters for electrical installations. There is a reference made in this Code to the type of connector involved in this suit. On page 52, Rule 503, Section G, it states:

"g. At all points where the armor terminates, an approved fitting shall be provided to protect wires from abrasion, unless the design of the outlet boxes or fittings required by paragraph e of this section is such as to afford equivalent protection, and in addition, an approved insulating bushing or its equivalent approved protection shall be provided between the conductors and the armor. The connector or clamp by which the armored cable is fastened to boxes or cabinets shall be of such design that the insulating bushing or its equivalent will be visible for inspection."

The date of this Code I am referring to is 1933; effective November 1, 1933. That same provision or substantially similar provision is incorporated in the codes subsequent to the year 1933, down to date. I have a memorandum covering the sales of cable connectors by the Thomas & Betts Company and its licensees under the

patent in suit from the date of acquiring the license of that patent to the last report made by the licensees about probably two or three months ago. I had the memorandum prepared; I did not prepare it myself. Going back to the question, how many cable connectors have been manufactured and sold by Thomas & Betts Company according to that report, Thomas & Betts Company and its licensees have sold sixty-four million. The owner of the patent sold about six million and a half, making a total of over seventy million.

The Court: Mr. Bohleber, just let me interrupt for a moment. I don't think that book of the National Electrical Code was marked. I think you better mark that Exhibit 18 for identification.

Mr. Bohleber: I think I will offer it in evidence, your Honor.

The Court: Well, you have already read from it the particular item, I assume, that we are interested in.

Mr. Bohleber: Yes.

The Court: And it won't be necessary to have the whole book in the record, but you better mark it for identification.

(The National Electrical Code of 1933 referred to by the witness was thereupon marked for identification as Plaintiffs' Exhibit 18.)

(The paper about which the witness has just been testifying as to sales was thereupon marked for identification as Plaintiffs' Exhibit 19.)

Now referring to Exhibit 19 for identification, I will explain the paper by referring to the various columns and types of connectors. There are two general types—set-screw and squeeze, we call them. The set-screw is the one with the screw, and the squeeze is the one with the

pinch mentioned in the patent. The rest are slight modifications by different manufacturers of the clamping device using their own trade names. They all contain the patented mouth. Now—

The Court: You are referring to the people who operate under the license?

The Witness: Yes. They use their own trade names.

Just giving the totals and the years, the year starts in the spring, so from March, 1932, to February 28, 1933, the sales were four million; the next twelve months period they were 8,700,000—I am giving the even figures—the next twelve months period they were 6,000,000; the next twelve months period they were 8,500,000; the next twelve months period they were 10,800,000, and the last three-quarters, from March to November, there were 5,000,000 sold.

The Court: That is this year?

The Witness: Yes, that is this year. Then there were other sales not included in the above, from November, 1933, to December, 1934, by licensees where licenses have been cancelled. They amount to about 1,150,000. That makes a grand total of 63,967,000, in addition to which the owners of the patent for that same period, not including any sales for 1937, sold 6,400,000, making a total, as said before, of 70,377,000. There is a report for the owners' sales that are not included in that first sheet.

(The tabulation to which the witness just referred was thereupon offered and received in evidence as Plaintiffs' Exhibit 19.)

The Court: The witness calls attention to the

fact that he had in his possession a memorandum relating to sales made by the owner of the patent.

Mr. Bohleber: Yes.

The Court: Which was not a part of Exhibit 19.

Mr. Bohleber: That is right.

The Witness: But which I quoted from.

The Court: All right.

Approximately the gross selling price of all the connections manufactured and sold by the plaintiffs and other licensees under the patent in suit since the date of that exclusive license, namely, on January 22, 1932, is over \$1,500,000. I haven't got a memorandum of approximately how many connectors were sold prior to the date of our exclusive license coming within the scope of the patent in suit.

92

Cross Examination:

Q. Mr. McMurtrie, how many licensees did you say altogether the Thomas & Betts Company have? A. My recollection is nine. You have the list there.

Q. How many companies are there manufacturing electrical fittings who are not licensed under that patent? A. I don't know.

93

Q. Are there any? A. I imagine so, although I don't know how many.

Q. There are no large ones? A. I don't know.

Q. You testified, I believe, that some 63,000,000 of these connectors have been sold under license, is that correct? A. By ourselves and our licensees.

Q. No, I believe you said that there were about 70,000,000, including your own. A. No, that was 70,000,000 including the National Electric Products Company. They own the patent.

Q. Oh, I see; you are including the Thomas & Betts

as one of the licensees when you say 63,000,000? A. I said—

Q. 63,000,000 sold by licensees under the patent? A. I said by ourselves and our licensees.

Q. And how many of those were sold by Thomas & Betts? A. 19,600,000.

Q. Leaving about 44,000,000 that were sold by other licensees under the patent, is that correct? A. Yes, sir.

Q. How many of those were you paid royalties on? A. So far as I know, on every one of them.

95 Q. Isn't it true that some of your licensees have not paid you any royalties for some time? A. It is not.

Q. Have you a copy of the patent in suit before you? A. I have.

Q. Will you please refer to page 1, lines 53 to 64 of that patent? A. Yes, sir.

Q. Would you read that aloud, please? A. 63?

Q. 53 to 64. A. 53 to 64:

96 "When the edge of the armor 6 has been cut away, the jacket 5 is unwound for a suitable distance and broken off, thus leaving an annular space around the conductors within the armored cable back of the cut-away edge."

Is that what you mean?

Q. That is correct. A. (Continuing):

"Into this space there is slipped around the conductors the split tubular bushing 7 formed of insulating material and having at its outer edge the integral shoulder 8 which bears against the cut-away edge of the armor, leaving the exposed conductors 4 projecting therefrom."

Q. Now, in preparing that Exhibit 16, that is the assembly of box and connector, did you unwind the jacket 5 for a distance below the ragged edge of the cable, as

required by this portion of the patent? A. I did on one. The other one apparently was wound too tight, I could not get it off.

Q. You tried to unwind it and could not do it? A. I think so.

Q. Then it says, "Into this space the split tubular bushing 7 is pushed." A. Yes.

Q. And having a shoulder 8 which bears against the cut-away edge of the armor." A. Correct.

Q. That is, the bushing is pushed all the way down in? A. Yes.

98.

Q. Is that correct? A. Yes.

Q. Now, on page 1, lines 91 to 94 of the patent it is stated:

"In fact, as shown in Figures 1 and 5, the shoulder of the bushing projects slightly beyond the side edge of the lock-nut 15,"

and in Figs. 1 and 5 you will notice the reference numeral 8. That refers to the bushing, does it not? A. Yes.

Q. That bushing is placed very near to the edge there? A. Yes, I see.

99

Q. And it gets underneath the shoulder 9 of the connector, is that right? A. Yes.

Q. That is what the patent requires, is that correct? A. That is what the specifications state.

Q. Underneath that shoulder 9 on the connector? A. That is what the specifications say.

Q. Yes. If it projected beyond that shoulder 9, there would be no point to these peep-holes around the top of the connector, would there? You could look directly at it and see the bushing? A. You could in some situations, yes.

Q. Well, take Exhibit 17, I think that is the number.

Yes, Exhibit 17. If that bushing projected out beyond the flange of the connector, you could see it, couldn't you? A. Yes.

Q. There would be no difficulty in seeing it? A. If it projected beyond there you could see it, beyond the outside edge of the flange.

Q. Yes; and I notice in claim 1 that there is a shoulder bearing against the outer end of the armor. That is referring, I take it, to the type of assembly shown in Figs. 1 and 5, with the bushing pushed down inside the connector, is that right? A. Yes.

101 Q. And in claim 2 it refers also to a shoulder bearing against the end of the conduit. That is referring to that same type of construction or assembly? A. That refers to the bushing against the edge of the conduit.

Q. Now, from your Exhibit 16, in putting the first connector in place I noticed that after you had stripped the paper away down to the end of the cable where the cable was cut off, you then put in a bushing. A. Yes.

Q. Then over that you do have a connector, that is correct, isn't it? A. Over that I put the connector sleeve, yes.

102 Q. And then you fasten that to the box? A. Yes.

Q. Now, in putting the second of these connectors on Exhibit 16, why did you not also use a bushing? A. I did.

Q. Well, where is it? A. It is there. I can see it. That is right there (indicating). I can see it.

Q. Oh, so there is a bushing in each of these? A. Yes.

Q. I did not see you put it in.

The Court: I saw him put it in.

Mr. Crews: And since it is almost impossible to see it, I did not notice it was there.

The Court: You remember I called attention to what he put in when he put the first in.

Mr. Crews: Yes, your Honor.

The Court: The fact that you could see it better if you unscrewed the lock-nut, and then I watched to see what the situation was when he put in the second one.

Q. Now, in this Exhibit 16 I notice that the bushings are so far down in that the wires, the insulation on the wires themselves, is rubbing against the corner of the connector. Do you notice that? A. Yes, I do.

Q. And that creates some wear against the wires, doesn't it? A. It might. 104

Q. If that bushing were put in so that its shoulder projected beyond the connector, that would protect those wires against that edge, would it not? A. Provided the bushing stayed in place.

Q. Provided that what? A. Provided that the bushing stayed in place.

Q. Your answer is it would, provided that if the bushing stayed in place? A. Yes, sir.

Q. And what would keep the bushing from staying in place? A. Nothing could keep it from staying in place. Vibration would loosen it up.

Q. What vibration? A. All vibration, any vibration in a building or in an installation. There is always vibration. 105

Q. The vibration such as we have in the courtroom right now? Is that what you are referring to? A. I am referring to vibration in an ordinary building.

Q. Well, such as the courthouse here? A. Yes.

Q. That would dislodge the bushing? A. It probably would.

Q. Did you ever hear of a case where a bushing was dislodged? A. No, I have not. I never knew of a bushing being put in that way.

Q. Well, how did they put them in prior to the patent

in suit? A. They didn't put them in. They put them in with connectors the same as these are put in, so you could not see whether they were put in.

Q. They did not leave the shoulder projecting beyond—
A. No.

Q. How many have you seen put in, Mr. McMurtrie?
A. I?

Q. Yes. A. I can't tell you exactly, but I have seen thousands of them.

Q. How recently? A. Within a few months.

107

Q. How does the price of the connectors with the peep-holes, such as that Exhibits 1 and 2, compare with the price of the connectors not having peep-holes? A. I don't know. We don't sell any without the peep-holes.

Q. Do any of your licensees sell any without peep-holes? A. I don't know. I don't receive any such reports today.

Q. When the connectors with the peep-holes were first put out by you and the other licensees they were sold at lower prices than the connectors shown on Exhibit 17 then on the market, were they not? A. What is that?

108

Q. (Read.) A. I am not sure. The prices varied from time to time.

Q. You read a section from the National Electrical Code. A. Yes, sir.

Q. I didn't hear anything in the section you read that had any reference to this type of connector. Can you point out to us what particularly you had in mind in that section? A. (Reading):

“The connector or clamp by which the armored cable is fastened to boxes or cabinets shall be of such design that the insulating bushing or its equivalent will be visible for inspection.”

It does not say you have got to have peep-holes, it says it has got to be visible for inspection.

Q. It simply says it has got to be visible? A. Yes.

Q. So that if you put the bushing in with the shoulder outside the connector, it would satisfy that requirement of the Code, wouldn't it? A. I presume so, yes, providing it was so installed that it remained in place.

Q. If it would remain in place, yes; if it did not shake out due to the vibration of the building? A. Yes.

Q. And with the connector of Exhibit 17 that would also be true, would it not, Mr. McMurtrie? Exhibit 17 is the earlier type.

The Court: This one here, the one with the old mouth? 110

The Witness: Yes.

Q. How long has the Fire Underwriters Code required that bushings be visible? A. I think it took effect November 1st, 1933, according to the code there.

Q. They did not require it before then? A. The code states it becomes effective November 1st, 1933, I think. Didn't I read that?

Q. Well, there was a code before that one, wasn't there? A. They did not require it.

Q. Now, Mr. McMurtrie, I want you to point out for us, if you will, the exact differences in construction between the connector of Exhibit 17 and Exhibit 1. A. The entire difference is in the mouth being so formed that when a bushing is placed at the end of an armored cable, inserted therein, in Exhibit 1, that bushing can be seen, in Exhibit 17 it cannot be seen. 111

Q. Well, of course, we just got through discussing the question of whether the bushing can be seen. I am interested now in the question of the differences between those two pieces of apparatus. Now, as I see it, the real difference is that the little portion of the lip of Exhibit 17 has been cut away, and there we have Exhibit 1, is that correct? A. That is correct.

Q. We have an inwardly protruding flange on Exhibit 17, do we not? A. Yes.

Q. Just as we have on Exhibit 1? A. Yes.

Q. That simply involves cutting these little niches in the connector? A. Yes.

Q. In order to make Exhibit 1 from Exhibit 17. Of course, the same thing is true about Exhibit 2, except that it is a squeeze type? A. A different method of fastening the cable.

113 Q. How many different types of bushing are on the market, Mr. McMurtrie? A. I am not familiar with it.

The Court: Do you know of more than one?

The Witness: I do not, today.

Q. You do not? A. No.

Q. And how many of those bushings are made by licensees of Thomas & Betts, or National Electric Products? A. You mean connectors or bushings?

Q. I am speaking of bushings. A. I don't know anything about them. We don't license them to make bushings, we have no license on the bushing patent.

The Court: Do you make the bushings that you use, or do you buy them?

The Witness: We do not use them. We do not make them. We make the connectors.

Q. It is a fact, though, isn't it, that within your knowledge that at least 99 per cent. of the bushings in the connectors today are made by firms or individuals who are licensed under the patent here in suit? A. I haven't any idea, because this patent does not cover that bushing.

Q. Yes, I know it doesn't, but you do know— A. They are not made under licenses under this patent, then.

Q. But you do know that all the large manufacturers

of electrical fixtures in the country are licensed under the patent in suit, don't you? A. I gave you a list of them.

Q. Yes, and you have already stated that you did not know whether there were any other manufacturers at all? A. I imagine there are one or two; I don't know.

By the Court:

Q. Well, Mr. McMurtrie, does that patent provide for the use of any particular bushing, or, would you say, in interpreting the patent, that any bushing on the market could be used? A. I don't know what other bushings are on the market. It provides for the use of this particular bushing.

Q. That is the point I want to get at. Now, where would a person who desired to use connectors under your patent know of the existence of the particular bushing that you there refer to? A. Well, they must have—it requires under this patent it must have means for retaining the bushing in place, and that is not necessarily just that flange, but I have never seen any other bushing on the market.

Q. Well, you see the bushing in the figure of that patent, do you not? A. Yes.

Q. Now, that bushing you do not manufacture or license the manufacturing of? A. No.

Q. Would it be necessary, in order to make your patent effective, that the bushing that would be used would have to be a bushing that primarily would be designed as shown in the figure in that patent? A. No.

By Mr. Crews:

Q. But there would be no point in the use of these peep-holes as shown in the patent unless the bushing actually went down under the shoulder of the flange of the connector, isn't that right? A. There would not.

Q. If the bushing had a collar that projected or could project right out beyond the connector, then there would be no point in the peep-holes? A. No.

Q. And such a bushing could be made by simply lengthening the collar at the top of it, could it not? A. I presume so; I don't know.

Q. Well, I show you a copy of Schneider, *et al.*, Patent No. 1,742,488. That shows a bushing—

Mr. Bohleber: Now, your Honor, I object to that. That is going into the prior art, and this witness has only been called as a practical man.

The Court: No, I will allow it. That is the Schneider patent?

Mr. Crews: Schneider, *et al.*, 1,742,488.

Q. That patent shows a bushing having a long collar, does it not? A. Yes.

Q. And in using that bushing with connectors of the type shown in Exhibits 1 and 2, the collar would project beyond the connector, would it not? A. Yes, sir.

Q. And there would also be means to hold that bushing in place, would there not? A. Yes, sir.

The Court: Did you ever hear of the Schneider patents?

The Witness: Yes, I know of it.

Q. And you also know that millions of this type of bushings have been manufactured and sold? A. No, I do not, I know nothing about that. I do know, however, that they have means of securing it in place.

Q. But you do know that some of them have been sold? A. I don't know.

(A copy of Schneider, *et al.*, patent 1,742,488 was thereupon marked for identification as Defendants' Exhibit A.)

Q. I show you a copy of Schneider, *et al.*, patent, number 1,795,577. That patent shows a bushing, doesn't it? A. Yes, sir.

Q. In use with the connector? A. Yes, sir.

Q. And the connector has means for holding the bushing in place? A. Yes, sir.

Q. And the bushing has a portion which projects beyond the end of the connector? A. Correct.

Q. So it could be seen at all times? A. Yes, sir.

(A copy of Schneider, *et al.*, patent 1,795,577 was thereupon marked for identification as Defendants' Exhibit B.)

Q. I show you a copy of patent to Knoderer, 1,857,197. That patent shows a bushing, does it not, and I call your particular attention to Fig. 11? A. Yes, sir.

Q. And that bushing has a portion which projects beyond the end of the connector, does it not? A. Yes, sir.

Q. And it has means for being retained in place by the connector? A. It has.

Q. And that patent is assigned to the General Electric Company, is it not? A. Yes, sir.

(A copy of the Knoderer patent 1,857,197 was thereupon marked for identification as Defendants' Exhibit C.)

Q. Mr. McMurtrie, are you familiar with the Walker cable? A. Not under that name.

The Court: Walker cable?

Mr. Crews: Walker, yes, sir.

Q. Walker Brothers. A. I know the firm of Walker Brothers, but I am not familiar with the cable under that name.

SAMUEL JOSELSON, of 3235 Grand Concourse, Bronx, called as a witness on behalf of the plaintiffs, being first duly sworn, testified as follows:

My name is Samuel Joselson; I live at 3235 Grand Concourse; at my last birthday I was 40 years old. I am president of Electrical Fittings Corporation, a corporation of New York State, one of the defendants in this suit. I am the husband of Belle Joselson, one of the defendants in this case. I live with her now.

125 I was president of the Joselson Sales Corporation during its existence. What has happened to that corporation is that the assets and liabilities were bought out by the Electrical Fittings Corporation, which is in existence now. Joselson Sales Corporation is still in existence in that I believe it has not been legally dissolved.

Q. How much capital stock was authorized by the Joselson Sales Corporation? A. I haven't got those figures.

Q. Well, do you know how much is issued and outstanding? A. I do not, I am sorry to say.

126 Q. And who were the stockholders of the Joselson Sales Corporation? A. Samuel and Belle Joselson.

Q. How much stock did you own in the Joselson Sales Corporation? A. It is so far back I really don't remember.

The Court: What was the proportion in which the stock was held by your wife and yourself?

The Witness: Oh, I believe I owned the greatest majority of it by far.

Q. Do you have any idea what Belle Joselson held?
A. I have not, counselor.

Q. Who were the directors of the Joselson Sales Corporation? A. I don't remember that, either.

Q. Did you have directors? A. I can't even answer that.

The Court: How did you make the transfer of the assets of the corporation to Electrical Fittings Company?

The Witness: By assigning the stock of Belle and Samuel Joselson to the Electrical Fittings Corporation.

The Court: The Electrical Fittings Corporation did not take over the assets, but they became the owners of the stock of the Joselson Sales Corporation?

The Witness: They took over the assets and liabilities.

Q. And took over the stock also? A. I don't know. I think the stock of Joselson Sales Corporation was dissolved.

Q. Was Belle Joselson an officer of the Joselson Sales Corporation? A. Yes, sir.

Q. For what period? A. For the duration of the corporation.

Q. What office did she hold? A. Secretary and treasurer.

The Court: And you were president?

The Witness: Yes, sir.

Q. Was there anybody else besides you and Joselson connected with the Joselson Sales Corporation either as officer or director? A. No, sir. I don't remember whether there were any directors.

Q. You don't remember whether there were any directors at all? A. Of the Joselson Sales Corporation.

Q. Is the Joselson Sales Corporation actively engaged in any business at the present time? A. No, sir.

Q. What office or position do you hold in Electrical Fittings Corporation? A. President.

Q. Have you been president throughout its existence? A. Yes, sir.

Q. Has Belle Joselson been connected with that corporation in any way? A. Not since the formation of the
131 Electrical Fittings Corporation, she has not been.

Q. Well, was she connected with it when it started out, or not? A. No, sir.

The Court: Who are the other officers of the Electrical Fittings Company besides yourself?

The Witness: Mr. I. G. Trattler.

Q. And what office does he hold? A. He is vice-president and treasurer.

The Court: Who is the secretary?

The Witness: I am, your Honor.

Q. And you are president and secretary? A. President
132 and secretary.

Q. Did you bring the books of the Electrical Fittings Corporation with you? A. No, sir.

Q. You did not? A. No, sir.

The Court: Were they subpoenaed?

Mr. Bohleber: Yes, your Honor.

Mr. Crews: I beg your pardon. Mr. Fassett is, agreeing, I believe, that they were not.

Q. How long have you been secretary of the Electrical Fittings Corporation? A. Since its inception.

Q. Who are the stockholders in the Electrical Fittings

Corporation? A. Samuel Joselson, Irving G. Trattler and Edwin J. Schneider.

Q. You—what are their relative stockholdings in the Electrical Fittings Corporation? A. I own fifty per cent. and Mr. Trattler owns 25 per cent. and Mr. Schneider owns 25 per cent.

Q. How long had Trattler owned 25 per cent. of the stock in the Electrical Fittings Corporation? A. Since the inception of the corporation, Electrical Fittings Corporation.

Q. And is that also true of Mr. Schneider? A. Yes, sir.

Q. Does Trattler devote his entire time to the Electrical Fittings Corporation? A. Not the entire time.

Q. How much? A. Well, I can't say exactly how much, but he devotes some time to this corporation.

Q. Well, aren't you the president of this company, and shouldn't you know? A. That is right.

Q. Well, what is the fact? A. Well, I should say he probably devotes two days a week.

Q. What about Mr. Schneider; how much time does he devote to the work? A. He doesn't devote very much at all; he probably spends an average of one day a week.

Q. And outside of his work with your corporation, what does he do, if you know? A. Well, I don't know just what title he has with the Eastern Tube & Tool Company. I believe he is vice-president of the Eastern Tube & Tool Company.

Q. Do you do business with that company? A. I represent them as a sales agent.

Q. They are known as Etteco, are they not? A. When I say I, I mean Electrical Fittings Corporation.

Q. That company is also known as Etteco, is it not?

A. No, sir; they use that as a brand, a name.

Q. The products manufactured by the Eastern Tube & Tool Company— A. Pardon me?

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Q. For products manufactured by the Eastern Tube Company? A. Right.

The Court: Is Mr. Trattler connected with any other business, so far as you know?

The Witness: Yes, sir. Now, your Honor, it comes back to me that Mr. Schneider is the president of the Eastern Tube & Tool Company, and Mr. Trattler, I believe, is vice-president or treasurer. I really don't know what their titles are.

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The Court: Well, they are both connected with the—

The Witness: With the Eastern Tube & Tool Corporation.

Q. Where are the books of the Joselson Sales Corporation? A. In our office.

Q. And who has custody of the same? A. We have, the officers.

Q. Which officers? A. All officers have custody.

Q. You mean all of the officers of the corporation have charge of the books, custody of the books? A. Well, they have the access to the books.

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Q. That includes Belle Joselson, is that right? A. Belle Joselson? Do you mean of the Joselson Corporation books?

Q. Yes. A. Yes, sir.

Q. You were called to testify in this case by subpoena, were you not? A. Yes, sir.

Q. That is, to testify for plaintiffs? A. Yes.

Q. Where were you over the weekend, that is, the last weekend? A. This weekend?

Mr. Crews: I object, your Honor.

The Court: What is the materiality of that?

Mr. Bohleber: We have been trying to subpoena these books, your Honor, and have had all kinds

of difficulty, and all of the reports that we got were that Belle Joselson; secretary of the old company—

The Court: You served this witness with a subpoena.

Mr. Bohleber: We served him with a subpoena. We did not know he was the secretary of the company.

The Court: Well, it would not have made any difference, you could have served him with a subpoena as president of the company.

Mr. Bohleber: Yes, but we thought we would serve the secretary, who usually has the custody of the books, and we have had difficulty with—well, it has been impossible to get service.

The Court: Well, where would you expect to find the secretary of the corporation which went out of business some time ago?

Mr. Bohleber: Well, we would expect to find them at their home.

The Court: I don't see that it is material where he was over the weekend. It is more pertinent to find where he is going to be over the next weekend.

Mr. Bohleber: This corporation, the Joselson Sales Corporation—

The Court: The point about it is, he is here now. He is here now.

Mr. Bohleber: Well, will you direct him to bring their books?

The Court: No. You can serve him with a subpoena.

Mr. Bohleber: All right.

Q. Are you an officer or director of the Eastern Tube & Tool Company? A. No, sir.

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Samuel Joselson—For Plaintiffs—Direct.

Q. Do you own any stock in that company? A. No voting stock.

The Court: Well, the question is, do you own any stock?

The Witness: Yes, I own some preferred stock.

Q. How much? A. I believe it is about—

Q. That is, just the proportion is all I am interested in. A. In dollars and cents I can give it better, I believe. Well, it is about 50 shares.

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Q. And what is the capitalization of the company? A. I don't know.

The Court: What is the par value of the stock?

The Witness: \$100.

The Court: \$5000 worth of stock?

The Witness: That is right.

The Court: At par?

The Witness: Yes.

Q. What is the relation between the Electrical Fittings Corporation, as a business, and the Eastern Tube & Tool Company? A. No relationship at all.

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Q. No business relationship? A. No.

The Court: Well, didn't you state a minute ago—

The Witness: Well, they represent them.

The Court: Your company is the sales agent?

The Witness: We are sales representatives.

The Court: Of products of the Eastern Tube & Tool Company?

The Witness: That is right. We are sales representatives. I did not quite get it down.

Q. Does the Electrical Fittings Corporation own any of the stock of the Eastern Tube & Tool Company? A. No, sir.

Q. What do you know about the Efcor Sales Corporation? A. The Efcor Sales Corporation is a corporation for—it is the Efcor Sales Corporation that is the sales agent for the Eastern Tube & Tool Company. That is what it is, it is not the Electrical Fittings Corporation at all.

Q. Well, now, which is it? A. The Efcor Sales Corporation represents the Eastern Tube & Tool Company. The Electrical Fittings Corporation has no connection whatsoever.

Q. What is the relationship between the Efcor Sales Corporation and Electrical Fittings Corporation? A. Well, it has the same owners, if that is what you mean. 146

Q. What do you mean by the same owners?

The Court: Is the stock of the Efcor Sales Corporation held by Mr. Trattler and Mr. Schneider and yourself?

The Witness: Yes, sir.

The Court: And in the same proportion?

The Witness: The same proportions.

The Court: That you own the capital stock of the Electrical Fittings Corporation? 147

The Witness: Yes, sir.

Q. And who are the officers of the Efcor Sales Corporation? A. May I ask him to give me that envelope that I have there? I have got it in there. I don't remember it now. (Envelope handed to witness.) The officers of the Efcor Sales Corporation are Mr. Trattler as president, Mr. Schneider as secretary and treasurer, and I am vice-president.

Q. Who are the directors of that corporation? A. There are no directors.

Q. Beg pardon? A. I don't believe there are any directors of the corporation.

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Q. Who are the directors of the Electrical Fittings Corporation? A. Mr. Trattler, Mr. Schneider and myself.

The Court: Don't you have meetings of the board?

The Witness: We do.

The Court: Well, now, when you have meetings of the board, who are the directors present?

The Witness: Just the three of us: Mr. Trattler, Mr. Schneider and myself.

Q. Are you a director of the Eastern Tube & Tool Company? A. No, sir.

Q. When was the Efcor Sales Corporation incorporated? A. (Examining papers.) The Efcor Sales Corporation—I did not get that. I believe it was in 1936 or 1937, rather. It was this year.

The Court: This year?

The Witness: Yes, sir.

(A certified copy of certificate of incorporation of Efcor Sales Corporation was thereupon offered and received in evidence from Plaintiffs' Exhibit 20.)

Q. Do you know what the capitalization of Efcor Sales Corporation is?

The Court: Doesn't the certificate of incorporation show that?

Mr. Bohleber: Yes, your Honor.

Q. When did your attention first come to the fact that there was such a patent as the Fullman patent in suit? A. Oh, I heard about that when the Thomas & Betts Company started to license other manufacturers

and told them that they had to come under that license to safeguard the market.

The Court: Well, when was that?

The Witness: That was probably in 1931 or 1932.

Mr. Crews: If your Honor please, after we got through with the hearing yesterday, attorneys for the plaintiffs asked us if we would produce the books and minute books of these three corporations, Joselson Sales, Electrical Fittings and Efcor Sales. We agreed to do so, and they are here today. Also Mr. Joselson tells me that he checked the books and there are a few mistakes in his testimony yesterday with regard to the ownership of the stock that he would like to correct.

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The Court: He may do that. Do you want to have those books marked for identification?

Mr. Bohleber: Yes, your Honor.

The Court: So that if, as and when they are referred to, reference can then be made to the particular book that is in use.

Mr. Bohleber: Yes, your Honor.

The Court: I think it might be a good thing if you just take those books and list them up here with the stenographer. Take the Joselson Company first and just mark them. What is the next exhibit number?

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(The minute book of the Joselson Sales Corporation was marked Plaintiffs' Exhibit 21 for identification.)

(The stock certificate book of the Joselson Sales Corporation was marked Plaintiffs' Exhibit 22 for identification.)

(The stock transfer book of Joselson Sales Corporation was marked Plaintiffs' Exhibit 23 for identification.)

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(The minute book of Electrical Fittings Corporation was marked Plaintiffs' Exhibit 24 for identification.)

(The stock certificate book of Electrical Fittings Corporation was marked Plaintiffs' Exhibit 25 for identification.)

(The stock transfer book of Electrical Fittings Corporation was marked Plaintiffs' Exhibit 26 for identification.)

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(The minute book for the Efcor Sales Corporation was marked Plaintiffs' Exhibit 27 for identification.)

(The stock certificate book for Efcor Sales Corporation was marked Plaintiffs' Exhibit 28 for identification.)

The Court: All right. Now what correction do you expect to make in the record of the testimony of Mr. Joselson based upon these books?

Mr. Crews: He has a memorandum, your Honor, showing exactly the stock ownership at all times.

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The Court: Well, show it to Mr. Bohleber and let's see if we can't agree by stipulation on those changes, or if not, you can put him back on the witness stand.

Mr. Crews: I believe, your Honor, that the only change in his testimony is that instead of 50 shares of Eastern Tube & Tool he owned originally, back in 1927, 25 shares of the voting stock, and that was converted in 1930 to non-voting preferred stock, of which he got 43 shares and those 43 shares were transferred to his wife on February 1, 1932. That is the only change.

The Court: All right.

Mr. Crews: And he says he also may have gotten some of the officers wrong. They are the

same men but he may have got the statement wrong as to which offices they held.

The Court: Well, after counsel have examined the minute books, if there is any change indicated in the minute book that differs from the testimony of the witness, that can be changed in the testimony or it can be done by stipulation or agreement.

Mr. Bohleber: Yes. I think probably it will simplify matters, your Honor, if at the conclusion we enter into a stipulation on this whole matter.

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The Court: Well, we will wait until you have had an opportunity to examine the books as to each of these companies.

Mr. Bohleber: Yes.

Q. Mr. Joselson, what is the present address of the office of the Joselson Sales Corporation? A. Well, it would be 663 Broadway.

Q. And what is the present address of the Electrical Fittings Corporation? A. 663 Broadway.

Q. And the Efcor Sales Corporation? A. 663 Broadway.

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Q. They are all located in the same office; am I right? A. Yes, sir.

Q. And have the Joselson Sales Corporation and the Efcor Sales Corporation always been located in the same offices of Electrical Fittings Corporation? A. At the time that Joselson Sales Corporation was in existence there wasn't any Efcor Sales Corporation. Efcor Sales Corporation was only incorporated on February 15, 1937.

by the Court:

Q. Well, has its office since its incorporation been at the same address? A. Yes, sir.

Q. As the— A. Joselson Sales Corporation.

Q. And the Electrical Fittings? A. Yes, sir.

By Mr. Bohleber:

Q. Now tell me fully the nature of the business of the Efcor Sales Corporation. A. The Efcor Sales Corporation is a corporation for the purpose of sales agent for manufacturers manufacturing other commodities, than what the Electrical Fittings Corporation is selling.

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Q. Does it represent as agent any other corporation besides the Electrical Fittings Corporation? A. It does not represent the Electrical Fittings Corporation; it represents the Eastern Tube & Tool Company.

Q. Any other corporation besides the Eastern Tube & Tool Company? A. No, sir.

Q. It does not represent the Electrical Fittings Corporation in any way? A. No, sir.

Q. Does the Electrical Fittings Corporation represent the Efcor Sales Corporation? A. Well, just how do you mean?

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Q. Does it represent in any way, the Efcor Sales Corporation, as agent or otherwise? A. No, sir.

Q. Does Electrical Fittings Corporation manufacture any articles itself? A. No, sir.

Q. What does it do? A. It purchases and sells.

Q. It has no agent for selling? A. Yes, sir.

Q. Other than individuals? A. Will you explain that, please?

The Court: Has it any corporate representative?

The Witness: No, sir. We have agents who sell these commodities all over the country.

The Court: Well, corporations or individuals?

The Witness: Individuals.

The Court: Electrical Fittings has not appointed other corporations as its selling agents?

The Witness: No, sir.

Q. Does the Efcor Sales Corporation do any manufacturing itself? A. No, sir.

Q. I show you your letterhead, one which was used by you on November 22, 1937, and point out to you that it says thereon in effect that Electrical Fittings Corporation—that is the name of the corporation's letterhead here—"Manufacturers of Efcor Products." How do you explain that? A. Well, we buy this material from manufacturers and put them up under our label and we sell it to the jobbers under our label as manufacturers.

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Q. Where does the name "Efcor" come in?

The Court: Well, isn't that quite apparent?

Mr. Bohleber: I think so, your Honor.

Q. When sales are made by the Efcor Sales Corporation, who bills for them? A. The Eastern Tube & Tool Company.

Q. Now, you testified yesterday that Belle Joselson was secretary-treasurer of the Joselson Sales Corporation from its inception and down to date. What were her duties?

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The Court: No; I don't think he said down to date.

A. I said down to the time that the Electrical Fittings Corporation has taken over their assets and liabilities.

Mr. Bohleber: I think you are right, your Honor.

Q. What were her duties as secretary and treasurer?

A. Well, nothing particularly, just being an officer of the corporation.

Q. Did she spend any time at the offices of the cor-

poration? A. At one time she used to come down regularly daily for a while.

The Court: Well, did she sign checks as treasurer?

The Witness: No, sir.

The Court: Did she sign documents as secretary?

The Witness: No, sir.

167 Q. How long did that continue of her coming down to the office? A. I believe it was about six months.

Q. Well, who succeeded her then as secretary-treasurer after the— A. She still remained secretary and treasurer.

Q. Who did the work of secretary-treasurer when she was absent? A. Well, it was a closed corporation; there wasn't really any work attached to the office.

Q. Then you were the sole executive and manager of all the affairs of the Joselson Sales Corporation; is that right? A. That is right.

168 Mr. Bohleber: Your Honor, that concludes our *prima facie* case excepting we may want to examine this witness a little further about the books of the corporation.

Cross Examination:

Q. Mr. Joselson, has your wife ever manufactured any connectors? A. No, sir.

Q. Ever sold any connectors? A. No, sir.

Q. Have you ever manufactured any connectors individually? A. No, sir.

Q. Have you ever sold any connectors on your own behalf? A. No, sir.

Q. Has the Electrical Fittings Corporation at any time ever manufactured any connectors? A. No, sir.

Q. Has the Joselson Sales Corporation at any time manufactured any connectors? A. No, sir.

Q. Was the Joselson Sales Corporation solvent throughout its history? A. Yes, sir.

Q. Has the Electrical Fittings Corporation been solvent throughout its history? A. Yes, sir.

Q. To what class of customers have the connectors sold by these two corporations that are the defendants here been sold? A. To jobbers.

Q. What do they do with the connectors? A. Well, they resell them to the electrical contractors or the industrial—

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Q. Have either of the defendant corporations ever sold a connector to anyone who actually used that in connection with a bushing and a cable? A. No, sir.

Q. They have sold only to persons or corporations who have resold them to the trade? A. Yes, sir.

Q. Were you ever notified by the plaintiff in this action in any way that you were infringing the patent in suit, prior to the time you were served with a bill of complaint? A. No, sir.

Q. And that was your first notice? A. Yes, sir.

Q. What did you do when you were served with that bill of complaint? A. Well, I called Bohleber & Ledbetter on the phone, at the time, and I spoke to Mr. Fassett on the phone, and I asked him what it was all about, and he suggested that I come up and talk and he will tell me about it when I get up there. When I got up there, he simply told me that we were infringing on their patent, and he showed me a couple of connectors that he bought from a jobber in New York and he asked me whether I recognized these connectors, and I said I recognized them as being made by the—one by the Steel City Electric Company and the other by the Chicago Steel Tank, which is now the Conduit Fittings Corpora-

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tion; whether I sold these particular connectors to the jobber I did not know, because it is very possible that those manufacturers sold them to them direct because they do sell to the jobbers the same as we do.

Q. Did you say anything to Mr. Fassett with regard to the question of license? A. Yes, I told him that the— he told me at that time about Sterling having the license cancelled, and of course I told him I did not know anything about it and it was not my intention to buy anything from anybody who was not licensed by the Thomas & Betts Company. I then asked him to please advise me of any future cancellations, and he said the company, the Thomas & Betts Company, would so advise me.

Q. You were informed of the names of the licensees, because they were listed in the bill of complaint? A. Yes, sir.

Q. And he said he would advise you if there were any cancellations? A. Yes, sir.

Q. Had you been advised of any cancellations? A. No, sir.

Q. Have you, since the filing of this bill of complaint in this action, purchased any connectors from any company that was not listed in the bill of complaint as a licensee? A. No, sir.

Q. Mr. Joselson, how did you happen to get started in the business of selling connectors originally? Will you tell us your story? A. Why, I was in the sales agency business and at the time I had my office in 43 West 16th Street, I believe it was there, and a man by the name of Mr. Eccles, who operated the Sterling Manufacturing Company, came up to me and said he has a proposition where he will manufacture these items—

Q. What items? A. Electrical fittings, and he would put me in a position where I could compete with any of the manufacturers.

The Court: When was that conversation?

The Witness: That was in 1932. And I said to him, "All right, let's see your proposition"; and he gave me the proposition and it was interesting, and when he came to the connector, I said to him, "Now, I understand that the Thomas & Betts Company have a patent on that," and I said, "I don't want to get mixed up in this if you are not licensed." And he said, "Well, I absolutely am licensed." I said, "Well, can you show it to me right now?" He said, "Well, I haven't got the license with me but," he said, "I will be down to see you before the week is over and I will have the license with me," and, oh, maybe two or three days later he was down again and had the license, the original Thomas & Betts license, with him, and he showed it to me and he walked out and he left the license with me, which I believe is—we have it here now.

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Q. This was the license under the patent in suit from Thomas & Betts to the Sterling Manufacturing Company?
A. Yes, sir.

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Q. And you still have the license in your possession?
A. Yes, sir.

Q. In buying these connectors from other companies, have you always ascertained as to whether or not they were licensed? A. I have always made it a point to find out from the manufacturers or their representatives whether they were licensed by the Thomas & Betts Company.

Q. And have you ever refused to buy connectors from anyone who was not licensed? A. Well, I have never had anybody approach me who was not licensed.

Q. Have you ever, in ordering connectors, ordered con-

nectors specifically of the peephole type as illustrated in Plaintiffs' Exhibits 1 and 2? A. Well, in ordering connectors we simply specify either set-screw or squeeze type.

Q. You have never specified that they shall be peephole connectors? A. No, sir.

Q. Or that they shall be of the particular type of Plaintiffs' Exhibits 1 and 2? A. No, sir.

Q. Why have you not specified that type of connectors?

179 Mr. Bohleber: Your Honor, I think that is going beyond the direct examination.

The Court: Objection sustained.

Q. How did you happen to stop buying connectors from the Sterling Company?

Mr. Bohleber: Same objection, your Honor.

The Court: I will sustain the objection until you show that he did stop buying, and when.

Mr. Crews: That is shown, I believe, your Honor, by our answers to the interrogatories which are in evidence. They show just—

180 The Court: Well, there is no harm in you stating it now.

The Witness: Will you please repeat the question?

(Question read by stenographer.)

The Court: No. One minute. I sustained the objection to that. What is the date in the interrogatories when they stopped buying from Sterling?

Q. 1934; is that correct?

Mr. Bohleber: In 1933—February, 1933.

The Court: February or March?

Mr. Bohleber: February, 1933.

Q. I think it was later than that; I think it was 1934.

Oh, Yes; I bought them right through to 1934, to July 1934.

The Court: July of 1934?

The Witness: Yes.

The Court: The witness makes that correction.

Mr. Crews: Well, do I understand I may now 182
ask my question, your Honor?

The Court: You may ask him what happened.

Mr. Crews: Yes.

Q. What happened along in July of 1934 in connection
with the Sterling Company? A. Why, that company—
was quite evident that they were going bad, their ship-
ments were bad, you could not get any fittings from them;
before they made a shipment they used to call me up and
ask me if I could not advance them some money. In other
words, it was quite evident that the connection there was
not as good as it used to be.

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Q. And they were disposing of the stock they had on
hand? A. Yes, sir, they were down offering all kinds
of bargains.

Q. Can you tell me what company made that particular
connector, Plaintiffs' Exhibit 1?

Mr. Bohleber: Your Honor, I object to it. It is
clearly beyond the direct examination of this wit-
ness.

The Court: The witness may state whether he
can tell or not; he can say yes or no.

The Witness: Yes, sir; I can tell you definitely

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Samuel Joselson—For Plaintiffs—Cross.

that this connector was made by the Steel City Company.

Q. How do you identify it? A. By their marking, which can be corroborated by—

The Court: No. By their marking. What is the marking?

The Witness: A star or cross on the top of the connector.

185

Q. Will you please point it out to the Court just where it is?

The Court: He has, but I was trying to fix in my own mind some designation that could be made on the record to show. Do you call that a lip, or what do you call it where the mark is?

The Witness: Well, that is a finger. That is what the patent in suit terms as a finger; am I correct in that?

Mr. Crews: I believe so. On one of the—

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The Witness: One of the projecting fingers.

Q. The mark appears on one of the projecting fingers; is that right? A. That is right.

Mr. Bohleber: Your Honor, I object to the testimony along this line because it is immaterial. These are not charged to be infringing devices. We base our charge of infringement upon the answer to the interrogatory.

The Court: I realize that.

Q. Can you tell me what company made the connector of Plaintiffs' Exhibit 2? A. This was made by the Chi-

cago Steel Tank Company, which is now the Conduit Fittings Corporation.

Q. How do you recognize that? A. Well, I recognize that—in the trade we all know that they use a smaller type of screw and they never finish it, and then they have that square type of lock-nut.

Mr. Crews: That is all, your Honor.

The Court: Any further questions?

Re-direct Examination:

188

Q. Do you have with you the license to Sterling Manufacturing Company? A. Yes, sir.

Q. Will you produce it, please? A. It is at the table there. (Document handed to Mr. Bohleber.)

(The Sterling license agreement was thereupon offered and received in evidence as Plaintiffs' Exhibit No. 29.)

The Court: Is there objection?

Mr. Crews: No objection, your Honor.

Mr. Bohleber: Your Honor, we rest except for an examination of these corporate books. 189

The Court: That is except for an examination of the books which have been marked Exhibits 21 to 28 inclusive for identification?

Mr. Bohleber: That is right.

DEFENDANTS' PROOFS.

(Plaintiffs' answers to interrogatories which were verified on April 13, 1936, were offered and received in evidence as Defendants' Exhibit D.)

EDWIN J. SCHNEIDER, 594 Johnson Avenue, Brooklyn, New York, called as a witness on behalf of the defendants, being duly sworn, testified as follows:

191

Direct Examination:

My name is Edwin J. Schneider. I am 44 years old. I live at Jamaica, Long Island.

I am President of the Eastern Tube & Tool Company. I have been president of that company about 10 years.

192

I am the E. J. Schneider who was a co-patentee of Patent No. 1,742,488, which has been marked as Defendants' Exhibit A for identification. We assigned that patent to the Eastern Tube & Tool Company at the time we made the invention. The Eastern Tube & Tool Company has manufactured under that patent. The article you hand me is a bushing of the type that is shown in this patent. We made many millions of bushings of this type. Over thirty million.

The Court: You mean millions of bushings?

The Witness: Bushings, yes. Over thirty million.

Those bushings were made beginning in 1929, until about the middle of the current year, the middle of 1937. We stopped making them because we sold our patents. They were sold to the National Electric Products Corporation, one of the plaintiffs in this case.

(The bushing just described by the witness as being made under this patent, was thereupon offered and received in evidence as Defendants' Exhibit E.)

Mr. Crews: I also offer in evidence the patent which has been marked for identification as Exhibit A.

Mr. Bohleber: I object to that, your Honor.

The Court: Overruled.

Mr. Bohleber: Will your Honor hear me on it?

The Court: Yes, I will hear you on it.

Mr. Bohleber: I don't see that this has any bearing upon this. It is what they have sold and not the patent itself which has to do with the issues here involved.

The Court: Well, the patent may or may not be material. Of course the really material thing is the bushing itself.

Mr. Bohleber: Yes, that is right.

The Court: I can't see that there is any particular harm in the reception of the patent, and I will receive it anyway and give you the benefit of an exception.

Mr. Bohleber: Thank you.

(Defendants' Exhibit A for identification was thereupon received in evidence as Defendants' Exhibit A.)

Bushings of the type of that Exhibit A are perfectly adapted for use with connectors of the type of Plaintiffs' Exhibits 1 and 2; that is what they were made to work with. I would say most of them have been actually used by the trade with connectors of this type. There are other kinds of connectors.

The Court: Do you know whether they were or not?

The Witness: I know that a great many of them were, but there are other types of connectors also in the field.

The Court: And there are other types of bushings?

The Witness: Yes, there are other types of bushings.

197 I am also a co-patentee of United States Patent No. 1,795,577, which has been marked for identification as Defendants' Exhibit B. When we made that invention we assigned it to our company. The article you hand me is the type of bushing indicated in this Patent No. 1,795,577.

Mr. Crews: I offer in evidence the patent which has been marked for identification as Exhibit B.

Mr. Bohleber: Same objection.

The Court: Same ruling.

Mr. Bohleber: Exception.

198 (Defendants' Exhibit B for identification was thereupon received in evidence as Defendants' Exhibit B.)

(The bushing which the witness just described was thereupon offered and received in evidence as Defendants' Exhibit F.)

This bushing of Exhibit F is adapted to be used with connectors of the type of Plaintiffs' Exhibits 1 and 2. My company made some samples of these bushings, but we never made quantities of them and never sold them. That was for this reason: It came about that the armored cable manufacturers gave bags of bushings with each coil of cable without any extra charge. The bag of bush-

ings was attached to each coil of cable. Now, if we were to make a connector incorporating this invention here, a bushing attached to it, we would have to get a considerably additional price in the market for such a connector as opposed to the ordinary type of connector without the bushing, and inasmuch as the electrician already had bushings furnished with his cable, he had no reason to pay us money for a duplication of the bushing inside the connector, so we never even tried to get to first base for that reason; it did not look sensible commercially.

I think that the bushing Exhibit F is a better bushing to use in a connector on an electrical job than the bushings that were used in—well, than the bushings that are ordinarily supplied with cable. It is insulated to a greater extent. 200

The Court: Would you say that bushing F was superior in character and quality to the bushing E?

The Witness: In insulating quality, yes.

Q. Bushings E and F, are those two— A. I answered that very hastily. I did not really know what type you have there. 201

By the Court:

Q. They are both your own. A. Are superior to what?

Q. No; I asked you if you say that bushing F is superior in quality and character to bushing E? A. I really misunderstood your question. No. Those two would do substantially the same thing. One was—

Q. How do you account for the fact that you have such a large sale of the type evidenced by Exhibit E and a very light sale of the type evidenced by Exhibit F? A. Well, that is type E they gave away with the coil of

202

Edwin J. Schneider—For Defendants—Cross.

cable and it was adapted to slip right into the connector. You see, there is no extra collar out there, that is a separate shoulder.

Q. Would it cost you more or did it cost you more to make Exhibit F than Exhibit E? A. A little more.

By Mr. Crews:

203

Q. Was that little more an important difference in regard to merchandising? A. The way this stuff is sold every difference is important. It is sold on a very close margin. This is an item which is manufactured in the millions, and we have to watch the unit costs very closely.

Cross Examination:

Q. Mr. Schneider, I call your attention to Defendants' Exhibit B, and I ask you to read aloud from page 2, lines 6 to 15, and explain what it means? A. Lines 6 to 15?

Q. On page 2. A. Yes.

204

"In practice, the shield 20 is inserted in the coupling by arranging the flange 15 in the recess 26 and with the pointed end projecting through and beyond the clamp, collar or ring 16."

I would have to refer to the numbers on the drawing.

Q. Yes, you may refer to them.

The Court: Have you a copy of the patent?

The Witness: I have it right here.

The Court: I mean a copy of the drawing?

The Witness: Yes, sir; it is on the patent, your Honor.

The Court: You may refer to the figures. You better read the next sentence.

The Witness: "When mounted in this position, the shield constitutes a unit part of the coupling and cannot be removed therefrom except by compression of the walls of the shield so that the projections 24 and 25 will clear the flange 15."

Q. That is as far as I asked you to read. Isn't it a fact that this patent—

The Court: No; you asked him to explain what that meant.

Mr. Fassett: Very well.

A. Well, that means just this: This connector has a double collar on it, as you can see, with a recess in between the two high collars.

The Court: Referring to what number; what figure?

The Witness: Take Fig. 2.

The Court: All right.

The Witness: You see two collars, 24 and 25, of a greater diameter than the No. 26. Now, if you just squeeze the connector slightly you can get No. 15 on the connector to catch in between the two high rings.

Q. I see. A. In other words, this was really meant to be sold in that way, assembled and complete.

Q. Defendants' Exhibit F, then, was intended to be sold as a unit with the connectors shown in Fig. 2 of this patent, Exhibit B? A. That is correct.

Q. It was not a separate bushing? A. Well, we could

have sold it either way, but our intention was that it was a combination proposition, connector and bushing.

Q. Now I (w)ish you would tell me whether the flange which is indicated by the numeral 15 in Fig. 2 of this patent is a continuous circular flange? A. It used to be, but then this in the picture with a cutout—

Q. No; I mean what is it in this patent?

The Court: He is speaking now of this patent.

A. Oh, in this patent?

209

Q. Yes. A. Well, the drawing here indicates that it is a complete circle without any openings.

Q. Wouldn't you say that the flange 15 shown in Fig. 2 of this patent is probably the same as the flange on Plaintiffs' Exhibit 17, which I hand you? A. Yes; it looks like the same thing.

Q. I hand you Plaintiffs' Exhibit 1, and I ask you if you can tell me what the purpose of the notches in the flange of that cable are for? A. As I understand it, the idea was to give greater visibility.

Q. What do you mean by greater visibility? A. Well, if you insert a bushing in this end here, not of this type—

210

Q. What end do you mean? A. If you take the bushings of the type—

Q. I will hand you a bushing. Will you explain to me how that bushing is intended to be used?

The Court: Let's have the record show that that is a duplicate of the bushing which has been put in evidence by the plaintiffs, No. 15.

Mr. Fassett: I did not know that that had been marked, your Honor.

The Court: Am I correct in that?

Mr. Fassett: I did not hear that. What happened, your Honor?

The Court: I mean am I correct in saying that that is a duplicate of that bushing?

Mr. Fassett: Yes, that is a duplicate of the bushing.

The Court: Of your bushing No. 15?

Mr. Fassett: Well, it wasn't marked. It became a part of Exhibit 16.

The Court: Yes, it was marked 15, and it went into Exhibit 16.

Mr. Fassett: That is correct, your Honor.

The Court: I merely want the record to show 212 what the particular object is which the witness is referring to in the testimony that he is now giving.

Mr. Fassett: That is correct, your Honor.

Q. Will you explain how that bushing, Exhibit 15, is intended to be used? A. Why, you could use it in various ways. One of the customary uses is to insert it in the cable as you have it here.

Q. And when it is inserted in the cable—

The Court: Is that cable marked?

Mr. Fassett: This is not. I am going to mark it. 213

The Court: All right.

(The cable referred to by the witness was thereupon marked in evidence as Plaintiffs' Exhibit No. 30.)

The Witness: I notice this is a 3-conductor cable, and the great bulk of cable, or the great majority of the cable used is 2-conductor. This happens to be a 3-conductor.

Q. But when a bushing is used like this one, is used on Exhibit 30, the notches in Exhibit 1 are used so that you can see whether that bushing is in place, isn't that

so? A. I understood that was the purpose, to give greater visibility to the bushing.

Q. Well, there is no occasion for having a coupling with notches in the face of it if you are using bushings like Defendants' Exhibit E, is there? A. No, there would not be at all.

Q. I believe you testified that your company manufactured and gave away bushings like Defendants' Exhibit E. Is that true? A. That is correct.

215 Q. And you gave them with cable which you sold of the type shown by Plaintiffs' Exhibit 30? A. Of that general type; I don't know what the details were.

The Court: The witness calls attention to the fact that that is a 3-conductor cable.

The Witness: Yes.

The Court: And he said generally they are 2-conductor.

Mr. Fassett: Well, that is not important. By conductors he means these wires.

The Court: I know. I merely mention that so that the record will show.

216 The Witness: Shall I explain why I mention that?

The Court: Not unless counsel wants you to do so.

Mr. Fassett: I think it is clear.

Q. But the armor on the cable, whether it has three or two conductors, is the same, isn't it, varying but little in size? A. The diameter would vary.

Q. Well, that is all? A. That is an important point.

Q. Well, when you said in your testimony that you sold thirty million—

The Court: He didn't say he sold thirty million; he said they made over thirty million, according to my notes.

Q. Well, the thirty million—

The Court: I may be wrong, but I note it here that the witness said they made many millions, over thirty; I didn't understand him to say they sold them.

Q. Well, those that you made you gave away with the cable? A. Gave away or sold. We sold some also.

Q. You did?

The Court: Can you say what proportion of the thirty million you sold and what proportion you gave away?

The Witness: At least two-thirds we sold in the form of bushings.

218

Q. Of those bushings which you gave away with the cable, do you have any idea how many of them were used? A. I would rather think that almost every one of them.

Q. I see. A. No one would buy them except to use them or sell them.

219

Q. Of these bushings that were given away with cable that you sold, do you know what type of connector was used with them? A. Well, I would not know; I would not know.

Q. Well, so far as you know, they could have been used with a connector like Plaintiffs' Exhibit 1? A. I think many of them were.

By the Court:

Q. Did you sell connectors with the cable? A. No, we never sold connectors, speaking for my company, we never sold any.

220

Edwin J. Schneider—For Defendants—Cross.

Q. But your company did sell cables? A. Yes, they manufactured and sold cable.

Q. And made the cable? A. Made the cable and sold it.

Q. And with the cables you sold or gave away the bushings? A. We gave away the bushings with cable which we had manufactured and sold, and we sold bushings just individually as bushings.

Q. As bushings? A. For instance, to other manufacturers or to a jobber customer.

221 Q. And when you sold cables and either sold with the cables or gave the bushings, was it necessary for the persons who purchased that cable and those fittings to use the connectors? A. Yes, they had to use the connector.

Q. But you did not furnish the connectors? A. We did not furnish them; no, sir. That was not our line of business.

Q. Well, were the bushings that you manufactured made with reference to any particular type of connector? A. Just these standard connectors of the type that we have here.

222 By Mr. Fassett:

Q. When you sold cables with bushings like Defendants' Exhibit E, isn't it possible that those bushings may never have been used, but instead they used bushings like Plaintiffs' Exhibit 15? A. Very unlikely.

Q. Well, do you know? A. I never knew of a case.

Q. You don't know—you would not know whether or not they may have done that? A. Well, I think I would have heard of it if it were an appreciable percentage.

Q. But you don't know? A. It might have been an isolated case, somewhere in the country, but I know this bushing was well regarded in the trade.

Q. But you don't know that that might not have been one? A. To what extent, a hundred per cent?

The Court: To any extent.

Q. To any extent. A. Well, it might have been a half of 1 per cent., but I am certain it could not have been any great extent or we certainly would have heard of it, complaints would have come back to us.

Q. The fact is that you don't know to what extent your pushings, Defendants' Exhibit E, were used; you just merely know how many of them were given away? A. How many I gave away and how many I sold.

Q. Yes. You know that? A. I know that. I have seen them in the field, used.

Q. Beyond that you would not know that; is that true? A. I could not know much beyond that.

By the Court:

Q. Do you know of any other type of connector besides the type which is here in evidence as Exhibits 1 and 2?

A. Besides this regular type we have here, 1 and 2, I think there was a clamp connector used in some cases. You may have samples there; if you have gone into connectors.

Q. Well, do you recognize in the two exhibits now before you, 1 and 2, the type of connector generally used throughout the trade? A. I think the greater percentage would be this type.

SAMUEL JOSELSON, recalled as a witness on behalf of the defendants, being previously sworn, further testified as follows:

227. In ordering connectors we never ordered any particular type of connector—just set-screw or squeeze type. We never specified the peephole type of connector, as exemplified in the Exhibits 1 and 2. We didn't specifically order this kind because I have never believed it to be of any commercial value. It didn't really make any difference whether we sold with the peephole or without the peephole, it was acceptable either way. The trade did not care which it got.

When we sold connectors I can't recall whether we ever received any orders for the peephole type. There might have been one or two instances, but I just can't recall it. One or two out of, oh, out of hundreds. The trade simply ordered connectors, and we supplied them. We supplied them with whatever connectors we got when we ordered connectors.

Cross Examination:

228. Q. Mr. Joselson, how do you reconcile your testimony that you have just given with Article 5, Section 505(g), page 52 of the National Electrical Code? I refer to Plaintiffs' Exhibit 18 for identification, and I call your attention particularly to the last sentence thereon. A. Well, it is my contention that the other type of connector is just as feasible as the so-called peephole type.

The Court: What other type of connector?

The Witness: Without the peephole.

The Court: Well, what other type are you referring to? Are you referring, for instance, to Plaintiffs' Exhibit No. 17?

The Witness: Yes, sir.

By the Court:

Q. Do you know of any other types of connectors sold on the market in addition to the types indicated by the samples here in evidence, Exhibits 1, 2 and 17? A. Yes, sir; there are several other types.

Q. How many? A. Oh, there are probably maybe three or four other types of connectors.

Q. Well, do you regard the type evidenced by Exhibits 1 and 2 as the type in more general use? A. I would say that they were used to a greater extent than any of the others. 230

Q. Do you handle any of the others? A. Well, whatever the factory ships, why, we sold, and that is what we shipped out.

Q. What factory? A. The factory we purchased from.

Q. Well, did you purchase any type of connectors different from the connectors shown by Exhibits 1 and 2? A. Well, I didn't make it a point to specify any others, but if they had shipped it as Exhibit 17, I believe it is, why, it is perfectly all right with us.

Q. Well now, what is the proportion of connectors which you have received in the past year of the type of Exhibit 17 as compared with connectors of the type of Exhibits 1, and 2? A. Oh, I don't believe it would be over 10 per cent., that is the 17 will not be over 10 per cent. of that, of 1 and 2. 231

Q. Do I understand that when you order these connectors you have no specific request of your prospective customer? A. No, sir.

Q. For any particular type of connector? A. Other than a set-screw or a squeeze type. That is the difference between Exhibits 1 and 2.

Q. Yes, I know. All right.

FREDERICK LATZER, 3511 Hull Avenue, Bronx, New York, called as a witness on behalf of the defendant, being duly sworn, testified as follows:

Direct Examination:

My name is Frederick Latzer. My age is 44. I live at 3511 Hull Avenue, Bronx. My occupation is consulting engineer.

233 Q. Will you please state what qualifications you have that would enable you to testify as an expert in this case?

By the Court:

Q. Are you a graduate of any school of engineering?

A. Yes, your Honor.

Q. What school? A. Cooper-Union, New York, night school.

Q. When? A. 1915.

234 Q. And have you been engaged in the practice of the profession of engineering since that time? A. Since before that time.

Q. And in what particular line of activity? A. Very largely in the building construction industry on the electrical end.

Q. In New York City? A. In and around the eastern district.

The Court: Do you want to make any further examination of his qualifications?

Mr. Bohleber: No, your Honor.

Mr. Crews: I would like to bring out one thing further, your Honor.

The Court: You may.

By Mr. Crews:

Q. Did you work in the trade prior to taking this degree? A. I did, yes.

Q. And the degree was electrical engineering? A. That is right.

Q. In connection with your profession do you do consulting work for electrical contractors? A. I do.

Q. And what kind of work do you do for them? What does this consulting work consist of? A. Estimating—that is the preparation of cost sheets upon which contracts are solicited; the execution of the work, when the contractor gets it, and by execution I mean the preparation of the required materials, lists thereof, at least, and the ordering of those materials; the general supervision of the job while in course of construction, and the general supervision of the men while engaged in this construction. 236

Q. Do you prepare lists of materials and order the materials for the contractors? A. I do.

Q. In any of the jobs that you handle do you have occasion to order connectors, electrical connectors of the general type indicated in Exhibits 1, 2 and 17? A. Yes. 237

Q. How many connectors would you say that you have ordered in the course of your consulting work? A. Well, it is rather difficult to say. I should say it would be close to a million.

Q. Can you tell me when you first saw a connector of the particular type illustrated by Exhibits 1 and 2 as distinguished from a connector of the type illustrated by Exhibit 17? That is my question is—

The Court: Mr. Crews, let me suggest, since it appears from the evidence that Exhibit 17 represents an older type of connector, that you ask him

when he first became familiar with connectors of that type.

Q. Can you tell me when you first became familiar with connectors of the type of Exhibit 17? A. Back about the beginning of my days in the electrical industry, about 1910 and—

239 Q. And can you tell me when you first saw a connector of the type of Exhibits 1 and 2? A. Not until about two years ago, I would say. May I qualify that? I first became acquainted with these connectors through trade literature some time before that but had not actually seen them used on the job for—oh, only about in the last two years.

Q. Had they been used before that time? A. I believe they have, but I cannot testify definitely that they have.

Q. When you order connectors for a job do you order any particular type? A. No, we do not.

Q. Have you ever ordered any particular type of connector? A. No, I have not.

Q. You simply specify a connector— A. An approved connector.

Q. An approved connector? A. Yes.

240 Q. And you take what you get? A. Yes, we do.

Q. Would it make any difference to you whether you got a connector of the type of Exhibits 1 and 2 or of the type of Exhibit 17? A. It would not, to me.

Q. Mr. Latzer, are you familiar with the requirement of the Code that the bushing be visible? A. I am.

Q. Is it necessary to install the bushing and connector in the manner of Plaintiffs' Exhibit 16 in order for the bushing to be visible? A. No, it is not.

Q. Would you consider the manner in which Exhibit 16 is assembled to be the preferred manner of assembling the parts there? A. No, I would not.

Q. I hand you some parts and will ask you if you will please assemble them.

The Court: Before you do that, let's have the box—the connecting box marked for identification, and have the cable marked for identification, so that he can explain it just as Mr. McMurtrie testified. The outlet box will be marked Exhibit G for identification.

(The outlet box was marked Defendants' Exhibit G for identification.)

242

The Court: The cable H.

(The cable marked Defendants' Exhibit H for identification.)

Mr. Crews: And the connector Exhibit I for identification.

The Court: Is this a different connector?

Mr. Crews: This is a new connector that he is going to assemble.

The Court: All right. The connector Exhibit I.

(The connector was marked Defendants' Exhibit I for identification.)

The Court: Now are you using a bushing which is similar to E or F? 243

Mr. Crews: Yes, sir; the bushings are the same.

The Court: Well, which?

Mr. Crews: Oh, no, no; not E and F; the bushing is the same as in Exhibit 16.

The Court: 16. That is, you are using a bushing similar to Exhibit 15?

Mr. Crews: That is right.

The Court: All right.

Q. Will you please assemble those, Mr. Latzer?

244

Frederick Latzer—For Defendants—Direct.

The Court: The witness is taking Exhibit G.

A. I take the connector and—

The Court: Inserts the connector.

A. (Continuing.) —and place the lock-nut on the inside of the box.

245

The Court: And places it into the opening from the outside and then attaches on the inside of the connector the lock-nut, then he inserts in the connector the armored cable, then over the armored cable on the inside—

Mr. Crews: Over the wires, your Honor.

The Court: That is over the wires in the armored cable, on the inside of the outlet box, he places a bushing similar to Exhibit 15, then with a screwdriver tightens the set-screw on the outside of the outlet box.

246

A. (Continuing.) Forcing the insulating bushing into place.

The Court: And forces the insulating bushing into place. Now counsel offers in evidence the box as a completed operation, as Exhibit J, and hands it to the Court.

(The completed assembly was thereupon received in evidence as Defendants' Exhibit J.)

Q. Now will you please point out—

The Court: The Court hands it for examination by counsel.

Q. Will you please point out the difference between Exhibit J and Exhibit 16? A. The difference lies in the fact that the insulating bushing was inserted from the front of the connector and slips through the connector and into the armor, while on Exhibit 16 the insulating bushing was placed in the cable, the cable then slipped into place and the insulating bushing rested on the inside of the connector rather than the outside.

The Court: Is the connector of the type indicated by Exhibits 1, 2 or 17?

The Witness: The connector is of the types 1 and 2. 248

The Court: Which?

The Witness: Connector 1.

Q. Exhibit 1? A. Exhibit 1.

Q. Now, I notice that the outlet box of Exhibit 16 and Exhibit J are different. Which is the more usual type of outlet box? A. This one, Exhibit J.

The Court: In your experience?

The Witness: Yes, sir.

Q. In Exhibit J the bushing—the shoulder of the bushing is outside the flanges of the connector or the flanges of the connector outside the fingers; is that right? A. That is right. 249

Q. Does that method of inserting the bushing in this combination satisfy the Code requirement? A. I believe it does.

Q. And if the bushing were installed in that manner with a connector of the type of Exhibit 17, would it be visible? A. It would.

Q. So that it would still satisfy the Code? A. It would.

Q. Why do you consider the method of assembling of

Exhibit J preferable to that of Exhibit 16? A. The function of the bushing in Defendants' Exhibit J has been not only to form an insulator between the conductors and the armor but has also formed an insulator between the conductors and the edge of the connector, the mouth of the connector.

Q. And that is not true of Exhibit 16? A. It is not.

Q. Is it any easier or less easy to use the bushing in Exhibit J than in Exhibit 16? A. It is easier.

251 Q. And if the connector were of the type shown in Exhibit 17, would it be as easy to use the bushing as in Exhibit 16? A. Equally easy.

Q. I show you a copy of a patent which has been put in evidence as Defendants' Exhibit A. Will you please tell me whether in your opinion that would be a more desirable bushing for use in this combination, such as Exhibit J, than the bushing you did use? A. It would be more desirable.

252 Q. Why? A. Because the bushing of this Exhibit A has a bead which may rest against the inside of the connector, and it has in addition to that an extended lip on the box end, if I may call it, of the bushing, which extended lip will protrude beyond the end of the connector and will make the presence of the bushing within the connector very much more readily ascertainable than it would with the bushing installed in Exhibit 16.

Q. In other words, the bushing would be visible even though some workman made the installation as of Exhibit 16? A. It would.

Q. And it would also protect the cable even though the workman made an installation in that way? A. It would.

The Court: Would you say that a bushing of the type manufactured under the patent Exhibit A

that you just looked at could be used in the operation such as shown by Exhibit 16?

The Witness: Yes, it could.

Q. I show you a patent which has been put in evidence as Defendants' Exhibit B. Will you please tell whether in your opinion the bushing shown in that patent is a more desirable one than the type of bushing which have been used in Exhibits 16 and J? A. It is more desirable.

Q. And, why? A. For the reason I advanced in my statement just before this on the bushing shown in Exhibit A, and the further and additional reason that this bushing has not only an extended lip but this extended lip is beaded, so as to form a rounded surface against which the wires may rest, a feature which the Exhibit A bushing does not possess.

254

Q. Are the bushings of both Exhibits A and B adapted for use with connectors of the type of Exhibits 1 and 2? A. They are.

Q. I show you a patent which has been marked for identification Defendants' Exhibit C. Will you please tell me whether or not in your opinion that is a more desirable bushing to use in this combination we have discussed than the bushing that was used in this Exhibit 16 and Exhibit J? A. Yes, I would say it is more desirable.

255

Q. Why? A. Because this bushing possesses a flared lip and a deep groove, which permits the bushing to be inserted in the lip of the connector and the groove to set tightly against the inside circumference of the lip so that the bushing is securely held in place.

(The exhibit which had been marked for identification as Exhibit C, was thereupon offered and received in evidence as Defendants' Exhibit C.)

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Frederick Latzer—For Defendants—Direct

Q. If the assembly of Exhibit J is properly made, is there any danger that that bushing will fall out after the assembly is completed and the job done? A. No, there is not.

The Court: Would it be affected by vibration?

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The Witness: If your Honor will permit me to qualify the answer, I cannot conceive of any building where this combination is likely to be used where sufficient vibration would be present to throw that bushing out of place.

Q. I hand you an article and ask you if you will tell me what it is? A. It is a piece of armored cable, 2-conductor, evidently No. 14.

Q. Does this particular piece of armored cable go by any particular name in the trade? A. Why, we know it as the Walker cable. I don't know whether it has any other name in the trade.

Q. You recognize that as a piece of Walker cable? A. Yes, I do.

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Q. And what is there about this Walker cable that distinguishes it from other types of cable? A. There are two features which appeal to us, if I may say that. The first, and possibly the most important, is the presence of this red fibre strip, which is an insulating medium, and the function of which is to take the place of these bushings that we have been discussing, both the bushing in Exhibit 16 and the bushing shown in the Exhibits A, B and C, I think it is. This strip may be wound around the rough edge of the armor in such a manner as to form an insulating medium. I will make a point to demonstrate that, I suppose (performing operation), and it is absolutely quite firmly embedded in there and remains very definitely an insulating medium. This slip can either

be torn off or preferably laid back against the armor in some such fashion (illustrating), and the connector is inserted therein and holds this strip in place.

There is a further advantage to this cable, it is a minor advantage, but it is an advantage in that there are marks—I would say there are indentations in the convolutions of this armor which form a sort of a guide to the workman in making his cut on the cable and make it somewhat easier to cut the cable and make the possibility of a deep cut into the insulation of the wire less remote than it is with the other types of cable.

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Q. Now, if you were assembling the combination of cable, connector and bushing using this Walker cable would you use a separate bushing? A. No.

Q. The fibre you have described itself acts as a bushing? A. Yes.

The Court: He said it took the place of it.

Q. Would this satisfy the Code? A. Yes, I am quite sure it would. It has been used.

Q. Is this Walker cable something that is in use today? A. Yes, it is.

The Court: How long has that been on the market, to your knowledge?

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The Witness: I have not personally come in contact with it until about six months ago.

Q. Are the connectors of the types of Plaintiffs' Exhibits 1 and 2 adapted to be used with this type of cable? A. Yes.

(The cable which the witness had been describing was thereupon offered and received in evidence as Defendants' Exhibit K.)

Mr. Crews: Your Honor, that completes our case

except for the consideration of the prior art. I don't know whether your Honor would prefer to have us bring that out through this witness or simply for the attorneys to discuss it.

The Court: I will be glad to discuss it with you. How long a time do you want, Mr. Fassett, to cross examine?

Mr. Fassett: Your Honor, it may be a little hard for me to tell, but certainly a half hour or more.

The Court: Then I will recess until ten-thirty tomorrow morning. In the meantime I will discuss in Chambers now with counsel the subject matter of the introduction of the prior art. I assume that that will be very largely documentary.

Mr. Crews: Yes, your Honor. My only question is whether your Honor would prefer to have it done through an expert or just leave it to counsel.

The Court: We will discuss that and see.

Mr. Crews: If your Honor please, before we start this morning I should like to know whether the plaintiffs are satisfied with their inspection of our books and we may now consider their case definitely closed?

Mr. Bohleber: No, your Honor. We are preparing stipulations that I think will be agreeable to the defendants.

The Court: When will those stipulations be ready?

Mr. Bohleber: They will be here in 15 or 20 minutes, and I think we may agree upon them during the morning recess.

The Court: Very well.

Q. Mr. Latzer, are there any places in electrical installations where connectors are used without these fibre bushings? A. Yes, there are.

Q. What places are those? A. They might be used in connection with a conduit raceway system. That is, when I say conduit I have reference to what we know as flexible metallic conduit, not the rigid conduit. This type of conduit uses a connector of this type or can use a connector of this type where it is fastened into an outlet box of one type or another, and the method of installation of this conduit is such and the requirements for the installation of this conduit are such that the conduit end itself must be clear of any rough edges. It is usually done by the insertion of a tool, a reamer, which smooths out the ends of the conduit, and this conduit end is then inserted into the connector and seated against the shoulder of the connector and the connector mouth acts as a bushing. In fact, the installation of an insulating bushing from the inside, that is inserting it into the conduit before this conduit is placed in the connector, is altogether impracticable because this bushing would present an obstruction to the raceway, and inasmuch as the conductors are inserted into this raceway or conduit after the conduit is in place, it would be very difficult, if not impossible, to insert these wires with this insulating bushing in place. The insulating bushing may, however, be inserted in the mouth of the connector in the way I demonstrated yesterday on the cable, after the conductors are in place. It is, however, not done because there is no engineering necessity and there is no requirement for it.

Q. Will you please explain a little more definitely what you mean when you refer to a raceway and what you mean when you refer to a conduit? A. The two, to some extent, are synonymous. A raceway, in electrical terminology, is any hollow, I might say, means through which wires are drawn, conductors are drawn into place. Now, a conduit is one type of raceway. There are other types of raceways.

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Q. That is, if the pipe or cable is installed first and the conductors put in after the installation, that is a race-way? A. That is right.

Q. What do you mean in the industry when you refer to Greenfield? A. Greenfield is a trade name for what is officially known as flexible metallic conduit.

Q. That is flexible cable without the insulators in it? A. Without the conductors in it.

Q. Without the conductors in it? A. Yes.

269 Q. If the conductors are in it, it is known in the industry as BX, is that right? A. That is the popular name of flexible armored cable.

Q. And if it is just the cable without the conductors in it, it is known as Greenfield? A. Yes, if it is the conduit without connectors it is; if it is flexible or, as you call it, a cable without conductors, it is known in the trade as Greenfield.

270 Q. Well, you spoke in your description just given to this type of connector, could be used in the way you have described. What type of connectors were you referring to? A. I was referring to what you call the peephole type of connector that was before me yesterday, I believe it was Exhibit 1 or Exhibit 2. It is not material whether it has peepholes or whether it hasn't peepholes.

Q. Are there any other places in electrical installations where connectors are used without these insulating bushings? A. Yes. We might use them in connection with the same type of Greenfield conduit to rigid conduit as a joint and continuation. In fact, a use in that way is very common.

Q. In the patent in suit the last paragraph of the specification states, "It will be understood that the specific form of the connector may be varied, and it will also be understood that while the invention is of particular advantage in the use of flexible metallic armored cables, it

may be used to advantage in the installation of electrical conduits of other forms." What are these other forms that are referred to?

Mr. Bohleber: If you know.

Q. (Continued.) In other words, what other forms—

The Court: Put it this way: Do you know of other forms.

Q. Do you know of other forms?

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The Court: Referred to.

The Witness: Where this insulating bushing is used in connection with the connector?

Q. No; I am afraid you misunderstood my question.

The Court: Let the stenographer read the quotation from the last paragraph of the patent in suit, or you might show him the patent so that he can read it for himself and perhaps he will better understand it, the last paragraph.

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(Patent handed to the witness.)

The Witness: Oh, you are looking at the claims?

The Court: No, not the claims, the last paragraph.

The Witness: The wording of the paragraph I just read is somewhat ambiguous. The phraseology, "It may be used to advantage in the installation of electrical conduits of other forms."

The Court: Yes. Now, that is the point. Do you know of other instances to which it has been or may be used?

The Witness: I do not.

Mr. Crews: That was not my question, your Honor. I was simply inquiring what other forms of electrical conduits there are other than the one expressly mentioned in the paragraph "Flexible Metallic Armored Cables."

The Witness: If I may take exception to classifying as a conduit an armored cable, it is not a conduit, in my opinion, I would say that the only other conduits used in the industry where it might be used at all, is the flexible metallic conduit, as I notice, but it is not used in that connection, in that situation, to any extent.

Q. Now, Mr. Latzer, I am afraid you are trying to anticipate my question instead of answering the question I asked. My question is simply what are the types of conduit or cable that are used in the industry, if you know. A. The flexible—

The Court: That is not your question.

Mr. Crews: Well, that is what I intended.

The Court: No. You were asking him with specific reference to the language of the last paragraph which you quoted, in which the patentee states, referring to his connector, "It may be used to advantage in the installation of electrical conduits of other forms," and in order to make it more specific the Court asked the witness if he knew of other forms in which, as the patentee claims, it may be used to advantage.

Mr. Crews: Well, what I want to get at, your Honor, is the question of what forms there are, so that we can determine what meaning the patent has.

The Court: That is another matter. You may ask him what other forms there are besides the forms that have been produced here.

Mr. Crews: Well, may I withdraw my question, then?

The Court: Yes.

Q. Will you please tell us, Mr. Latzer, what forms of electrical conduit or cable, different than Greenfield, there are in use in the industry? A. The flexible metallic conduit, the rigid iron conduit, both the thin wall type and what we know as the standard conduit; the non-metallic conduit, metal mouldings, underfloor raceways, which are also a metal form of raceway not circular in shape. I think those represent about all the conduit forms that are generally used.

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Q. And what are the principal forms of enclosures for wires that are in general use? A. The rigid iron conduit, I think both thin wall and the standard heavyweight type, is possibly used as a raceway in 90 or maybe a greater proportion of the cases.

Q. 90 per cent., you mean? A. Yes, 90 per cent. of the proportion.

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Q. And what percentage is the flexible metallic cable used? A. Very small. Its application is limited to special conditions. I would say that possibly 1 per cent. of the conduit raceways used in the industry might be represented by the use of flexible armored conduit.

Q. And when you speak of a rigid tubing, are you speaking of what a layman would look at and call a pipe?

A. Yes, exactly.

Cross Examination:

Q. Mr. Latzer, I believe you testified yesterday, did you not, that you had something to do with the con-

struction of buildings in which cable connectors were used? A. That is right.

Q. Will you state generally what your duties were in connection with such building construction? A. They ranged from—

Q. Just state specifically. A. The design of the electrical system, the estimating of quantities of materials required for the installation of the electrical work; ordering all materials for such installations; the supervision of the work actually installed, and general engineering supervision of the project until its completion.

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Q. When you worked at estimating, in taking off costs, and so forth, did you work from blueprints and specifications? A. Yes.

Q. In the specifications, how were connectors of the type we have been talking of here specified? A. Speaking generally?

Q. Speaking generally, if you please, about those buildings you know of. A. You are asking me to outline something that goes over a period of 20 years or more under widely varying conditions. I cannot be any more specific than to give you the best of my knowledge and recollection of the majority of cases.

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The Court: Let him state generally what conditions have been and then let him state with respect to the specific instances.

Q. You may do so. A. Generally connectors are not specified by any except the clause which I might typify by stating as an approved connector.

Q. That is all right. In connection with the construction of how many buildings have you performed such duties? You may state approximately, if you choose. A. I would say a thousand would be conservative.

Q. Can you name a few of them for us? A. Yes, surely. I have in mind two large apartment houses in the City of Yonkers, one on Carroll Avenue and one on Saratoga Avenue. The exact addresses, of course, I cannot give you. A large apartment house on 57th Street and 56th Street, between Fifth and Sixth Avenues, I believe the number is 54 West—I am not quite sure—54 West 57th Street.

The Court: How long ago was that?

The Witness: About four years ago.

The Court: How long ago did you have your connection with those two apartment houses in Yonkers? 284

The Witness: In Yonkers about 10 years ago. I am taking them at random, your Honor. Several apartment houses, one on 75th Street between Central Park West and Amsterdam Avenue.

The Court: When was that?

The Witness: This was about 1922.

The Court: That is 15 years ago?

The Witness: Yes, sir.

Q. About how much time would you spend on the work of each one, just average, of those buildings? A. It depends on the size of the building. 285

The Court: That would depend on the size of the building.

Q. Correct. I am just thinking of an average when you consider the thousand buildings.

The Court: Well, let's take these buildings he has mentioned. Take these two apartment houses in Yonkers, for example.

Mr. Fassett: Very well, your Honor.

The Court: How much time did you spend on the examination of the plans and specifications and in doing the work which it was your duty to do in connection with the construction of those buildings, each of those buildings?

The Witness: I would say that the total time spent on those two buildings—they happened to be constructed more or less after closely connected times—must have averaged in actual days working time, approximately two months.

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Q. Two months of your time? A. Of my time, yes.

By the Court:

Q. Now, take the building—was it at 56th Street? A. 57th Street, yes.

Q. 57th Street. How long did that take you? A. I think six or eight weeks would represent the time.

Q. Take the apartment house that you referred to in the 70s. A. 75th Street; that was a small project. I would say there not more than two weeks.

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Q. What have you done in the past year? A. The past year my work has been confined very largely, about 80 per cent. of my time, to design work, designing electrical installations.

Q. And did that include installations? A. No, your Honor, that was purely design. It did include some supervision.

Q. As I recall, you testified yesterday, Mr. Latzer, that perhaps you had ordered or handled about a million of these connectors. A. Yes.

Q. Can you tell me approximately what portion of those you have handled and had anything to do with, you have

handled since about 1930? I believe, if I recall, your experience with connectors began in 1910. A. Thereabouts, yes, sir.

Q. And I wondered what portion you think you have handled since 1930? A. Possibly 15 per cent.

Q. Probably 15 per cent. of them? A. Yes, sir.

Q. Mr. Latzer, I show you Defendants' Exhibit J, which you assembled yesterday afternoon during the direct examination, and ask you whether or not in assembling this device by the tightening of the set-screw of the connector it forced the bushing into place? A. No, it did not.

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Q. It did not? A. No.

The Court: But you forced it into place in connection with the manual operation of tightening the set-screw?

The Witness: No. The insertion of the insulating bushing had no connection with the manipulation of the set-screw.

The Court: No, but what I meant was that did you do both simultaneously?

The Witness: No, I tightened the set-screw first and put the bushing in subsequently.

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Q. Do you know whether a connector organization like that you constructed to make Exhibit J has ever been approved by the New York Board of Fire Underwriters?

A. I must answer that by saying that I have—

Q. The question is do you know whether it has been approved by the New York Board of Fire Underwriters?

A. By inference only.

Q. Do you know whether it has been approved? The answer I think could be yes or no. A. The answer is yes.

Q. When was it so approved? A. I don't know.

Q. How do you know it has been approved? A. By

virtue of the fact that bushings inserted in this manner have occurred on jobs for which certificates of approval have been issued by the New York Board of Fire Underwriters.

Q. Can you give us the name of one such job, and also the address of it, that you know of? A. Yes, this job in 57th Street—56th and 57th Streets.

Q. What address is that? A. 56 West or 54 West, I am not quite sure, 57th Street or—I have that wrong. I gave that address wrong. The building is on 57th Street and 58th Street, not 57th and 56th, and the address, as well as I can recollect, is 54 West 57th and 53 or 55 West 58th Street.

Q. What is the name of the contractor that erected that building? A. The Unit Engineering Company.

Q. The Unit Engineering Company? A. Yes.

Q. At what time was it erected about? A. 1933, I believe.

Q. What is the name of the building? A. It is an apartment house; it has no name.

Q. Who is the present owner, do you know? A. I don't know.

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Q. Who was the owner at the time the building was erected? A. I don't know that, either.

Q. By whom was it erected? A. The building was in alteration it was an existing building. It was an alteration.

Q. Oh, it wasn't a new building? A. No, it wasn't a new building.

Q. There was merely some new electrical work put into it? A. The entire electrical system was new.

Q. And you supervised the installation of the entire electrical system? A. I did.

Q. And did you tell us that the entire electrical system of that building is constructed in accordance with Ex-

hibit J, which you constructed for the Court yesterday?

A. No, I did not say that.

The Court: What was the name of that company?

The Witness: The Unit Engineering Company.

Q. Will you tell me how much of the electrical construction in this building was of the type of the organization which you constructed yesterday for making Defendants' Exhibit J? A. I don't know.

Q. You don't know how much of it was made that way? A. No, I do not.

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Q. You know that all was not made that way, is that true? A. That is true.

Q. Only some of it was that way? A. That is right.

Q. How many rooms do you suppose there are in this building?

The Court: Which building?

Mr. Fassett: In the building about the construction of which we have just been discussing.

The Court: I wanted to make sure you didn't mean the courthouse.

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Mr. Fassett: Thank you, your Honor.

A. There are two buildings involved, and I would say that there are about 300 rooms in each building.

The Court: In each building?

The Witness: In each building; yes, sir.

Q. Can you tell me specifically any portion of either of those two buildings in which we may today be apt to find this type of construction that is shown in Defendants' Exhibit J? A. I am afraid I cannot.

Q. Well, where was that type of construction used when the work was initially put in and about which you have testified you are familiar? A. In various parts of the building. I would inspect it as I would go about from place to place and find one inserted like that.

Q. You found some inserted like that? A. Yes.

Q. And some otherwise? A. I am not prepared to say that they were inserted otherwise, because I could not tell whether they were inserted at all.

The Court: Well, were all of the outlet boxes that you saw in either of those buildings of the type shown by Exhibit G?

Mr. Crews: J.

The Court: No, G is the outlet box. Did you see any which were similar to the outlet box in Exhibit 16?

The Witness: None whatsoever, your Honor.

Q. Mr. Latzer, will you please examine Exhibit J and tell me, if you can, whether the inner end of the bushing is inserted between the conductors and the inside wall of the armored cable? A. It is.

Q. How can you tell that the red bushing in Exhibit J is inserted between the conductors and the inside surface of the armored cable? A. The end of the armored cable is resting against the inside shoulder of the connector, tight against it. I so inserted it, and it has to be in that position. The bushing itself is—the insulating bushing is approximately $\frac{5}{8}$ ths of an inch from the bottom of the shoulder to—

The Court: The witness performs the operation.

A. (Continuing.) —to the end of the bushing. The edge of the armor must come within $\frac{1}{8}$ of an inch or

thereabouts from the mouth of the connector. In other words, there must be a space of at least $\frac{3}{8}$ of an inch of the length of the insulating bushing which projects beyond the inner face of the shoulder of the connector.

Now, this $\frac{3}{8}$ of an inch must go inside of the armor, that is between the armor and the conductors; because the circumference of the armor is such as to make it physically impossible to insert this insulating bushing through the mouth of the connector and not go inside of the armor.

Q. You can't see that it is inserted, can you? A. I can not; no, sir. 302

Q. And if the Exhibit J had not been assembled by you but had been assembled by another and presented to you for inspection, could you then have known that the bushing, if it has been inserted as you did, was inserted between the conductors and the inside of the armored cable?

The Court: No; if inserted as he did, he would have to say yes to that. You want to find out whether he could tell, if somebody else claimed to have inserted it, whether it was inserted between the armor and the conduit. 303

Mr. Fassett: If, your Honor please, by that I meant he had put this bushing on the outside of the fingers rather than on the inside. That is what I meant by the way in which he had inserted it.

The Witness: Read the question.

Q. (Read by the stenographer.) A. I could not be absolutely certain.

Q. If you wanted to be absolutely certain, and an organization such as Defendants' Exhibit J had been presented to you and that organization had been assembled by another, could it be taken apart and enable you to

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Frederick Latzer—For Defendants—Cross.

ascertain whether, before taking it apart, the bushing extended between the conductors and the inside of the armored cable? A. Yes, certainly.

Q. Can you take that organization apart without removing the red bushing from its insertion, assuming it has been so inserted between the conductors and the inside of the armored cable? A. No, I could not.

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Q. So the truth is if you doubted whether that bushing was, in fact, inserted between the conductors and the inside surface of the armored cable, it is such an organization that you could not take apart to decide whether it would properly assemble, isn't that true? A. That is true.

Q. Are you familiar with the requirements of the Code of the Board of Fire Underwriters? A. Yes.

Q. Then you know that it is necessary to have a bushing or its equivalent approved protection to be provided between the conductors and the armor? You know that that is specifically the requirement? A. I know that.

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Q. And so that no one examining an assembly like Exhibit J, which was presented to them, could tell whether or not it complies with the Code; is that true? A. That is true.

Q. Will you explain to the Court how you could know that these organizations in the buildings you have talked about were inserted in conformance with the Code? A. From personal observation of how they were actually put in.

Q. If I recall correctly, Mr. Latzer, during your testimony yesterday you said that the bushing, Exhibit E, having what you described as a bead, could be inserted in the organization, Defendants' Exhibit J, instead of the bushing you used; and I believe in connection with that you said that when so inserted the bead would be behind the fingers or flange of the connector. Will you explain

to the Court how that could be done? A. May I take this apart and show the Court? It will be necessary to remove this tag.

Q. Certainly.

Mr. Fassett: The witness says it will be necessary to remove the tag from Exhibit E in order to make the assembly. Let the record show that the witness has completely dismantled Exhibit J and has removed the conduit from the fitting and has inserted the bushing Exhibit E between the conductors and the inside surface of the armored cable. You may proceed.

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(Witness submits assembly for examination.)

Q. Is the lock nut tightened? A. As well as I can without a tool.

Q. Without a tool? A. Yes.

Q. Will you show it to the Court, please? A. (Witness hands assembly to Court.)

Q. Now, if I recall your testimony of yesterday correctly, you said that the bushing Exhibit E could be inserted into Exhibit J in the same manner in which you inserted the red bushing yesterday, which corresponds to Plaintiffs' Exhibit 15. A. Yes, sir.

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Q. So, having watched you reassemble this device, you were apparently mistaken, because you had to assemble it differently, did you not? A. No, I did not.

Q. Yesterday when you assembled Exhibit J you put the bushing in last, didn't you? A. That is right.

Q. This morning when you reassembled it you put the bushing in first, did you not? A. I did.

Q. So then it was not correct yesterday when you said that Exhibit E could be used like Exhibit 15, was it? A. Yes, it was.

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Frederick Latzer—For Defendants—Cross.

The Court: Well, suppose you take it out and put the bushing in last.

Q. Put the bushing, Exhibit E, in last as it now is assembled when you put it in first, but before doing that, let me ask you a few further questions. Open it up first. We will come to that in a moment. In Exhibit J as you have now assembled it—

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The Court: Reassembled it.

Mr. Fassett: Reassembled it; thank you.

Q. We note that the bushing E is between the inside surface of the armored cable and the conductors, don't we? A. We do.

Q. Because we put it in there first and saw it go in there, didn't we? A. That is right.

Q. And then we—

The Court: You better refer the pronoun to him, because you and I have nothing to do with it.

Mr. Fassett: All right, your Honor.

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The Court: We are not "we." This is not a Lindbergh case.

Mr. Fassett: All right, your Honor.

Q. Bushings like the type Exhibit E, assembled as you have this one now, I refer to Exhibit J reassembled, can be seen after they are in place tightly, can they not? A. They can.

Q. How can they be seen? A. By virtue of the fact that the collar of the insulating bushing, the collar which protrudes beyond the head of the bushing, is a substantial distance, over $\frac{1}{8}$ of an inch outside of the line of the mouth of the connector.

Q. Yes. That would be true if bushings of the type of Exhibit 17 were used, would it not?

The Court: What is that?

Mr. Fassett: That would also be true if connectors of the type of Exhibit 17 were used.

A. The answer is yes.

Q. The only thing you would have to do with a connector of this type, Exhibit 17, would be to make a hole large enough in order to have the bushing extend through it, would it not? A. You are referring to the mouth of the connector? 314

Q. That is correct. A. That is right.

Q. Now we turn to the question of a moment ago. I asked you to reassemble Exhibit J just as it was before you dismantled it.

The Court: He takes the cable out of the outlet box. Now he takes a bushing out of the cable and now he puts the cable into the—

Mr. Fassett (Interrupting): Connected without a bushing in it.

The Court: Then inserts the bushing and fastens the set-screw on the outside. 315

Q. Is that lock-nut tightened now? A. The lock-nut is tight.

The Court: Then he inserts the bushing, Exhibit E (15).

(Witness submits assembly to the Court.)

The Court: I am turning this around. It is not securely locked. I am turning it around so that I can see all sides of it.

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Frederick Latzer—For Defendants—Cross.

Mr. Fassett: That is all right, your Honor.
The Court: All right.

Q. Now, will you remove the bushing from Exhibit J, and before loosening the lock-nut disconnecting the connector from the box or loosening the set-screw, place Exhibit E in the mouth.

The Court: Exhibit E?

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Mr. Fassett: Exhibit E, which is a different bushing.

The Court: What did you use before? 15?

Mr. Fassett: That was Exhibit 15.

The Court: Then I improperly described it because I said he inserted E. It should have been 15. That was an error. The witness has now inserted Exhibit E.

Q. As Exhibit E is inserted, the bead on that exhibit is forward of the front edge of the finger, is it not? A. It is.

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Q. So that the bead is not behind the fingers, as you testified yesterday it would be? A. The bead is not behind the fingers.

Q. So then I guess we must conclude that Exhibit E cannot be used in Exhibit J in place of bushing 15, which was used when it was originally assembled. That is correct, is it not? A. It is not.

Mr. Fassett: Please read the question.
(Question read by stenographer.)

Q. Well, I guess it is true that it cannot be so used and get the bead behind the fingers? A. No, that is not true either.

Q. Well then, will you take—

The Court: Can you put it in so that the bead will be behind the fingers?

Mr. Fassett: Correct.

The Witness: The particular bushing here may be too long to be inserted.

Q. Don't touch the set-screw; just put it in. A. Well, his Honor asked me to put it in. I want to demonstrate that the bushing may be too long to be forced in.

The Court: Let's see if you can put it in without touching the set-screw and get it—

320

Q. Get the bead behind the fingers.

The Court: And get the bead behind the fingers.

Q. If you use a screwdriver will you mutilate the bushing? A. You may.

Q. Have you now mutilated the bushing? A. I did.

Q. You have crushed the bead? A. I did.

Q. You have damaged it beyond recognition in its previous form, is that correct? A. That is correct.

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The Court: Did you use the screwdriver to—

Q. And the screwdriver before was used to tighten screws with and not to press the bushing in, was it not?

The Court: No, he used the screwdriver to take a bushing out.

Q. That use of the screwdriver to take the bushing out was used in connection with Exhibit 15, was it not? A. Yes, sir.

Q. But that use of the screwdriver did not mutilate Exhibit 15, did it? A. It did not.

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Frederick Latzer—For Defendants—Cross.

Q. The use of the screwdriver here has mutilated Exhibit E, has it not? A. It has.

The Court: Is that the end of the demonstration? Haven't you got another Exhibit E that is not mutilated?

Mr. Crews: I handed Mr. Fassett one this morning.

Mr. Fassett: We do not have one like Exhibit E. We do not have another bushing like that.

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Mr. Crews: Here is another one, your Honor.

The Court: Is that conceded to be the same?

Mr. Fassett: (Examining bushing.) We think it is substantially the same, your Honor. It is made of fibre of a different color. The other was red fibre; this is black fibre.

The Court: All right.

Mr. Fassett: So we will ask the clerk to tie the tag of Exhibit E on the black fibre.

The Court: Let him use it first and then you may put the tag on afterward.

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Mr. Fassett: I thought we finished with that, your Honor.

The Court: No, he is going to put that in. You have asked him to put it in, and then you interrupted the operation by examining him with regard to the use of the screwdriver.

Q. Will you remove Exhibit E, the red fibre, from the assembly. You can use the screwdriver if necessary. A. I did have to use it.

Q. Now, I will ask you if you can answer—

The Court: Now, without loosening either the set-screw or the lock-nut—

Q. Or without mutilating the bushing, see if you can insert the new Exhibit E? A. No, I can not.

Q. You cannot because of the bead, isn't that true?

A. No, sir, I cannot, because I believe the bushing or the shank of the bushing is too long to be inserted under the armor.

Q. How long is the shank of the black bushing?

The Court: Well, how does it compare with Exhibit E?

Q. Correct; measure them. Hold them up side by side.

A. They are exactly the same.

Q. Exactly the same. So it is no longer than the old Exhibit E, is it? A. No. 326

Q. Now, will you please insert the new Exhibit E?

The Court: No, not the new Exhibit E; just say the black counterpart of Exhibit E.

A. Insert it from the outside?

Q. Insert it from the outside without mutilating it. A. (Witness complies.)

Q. The bead as you have now inserted it is forward of the fingers, is it not? A. It is.

Q. Can you insert it so that the bead will be rearwardly of the fingers, without mutilating it? A. Not unless I take the assembly out. 327

Q. Now, will you kindly reassemble—

The Court: Why not? Why can't you do it without taking the assembly out?

The Witness: I believe the bushing, the length of the bushing, prohibits it from going behind the armor sufficient to be able to put that bead under the ridge.

Q. You put the other one in when you assembled it properly though, didn't you? A. Which one?

Q. Exhibit E.

The Court: When you put it in before.

The Witness: Yes.

Q. So there is no—

The Court: Rather than after inserting the armored cable through the connector. Do you understand my question?

The Witness: Yes, I understand that question, your Honor. Yes, I did put it in.

329 Q. So there is no question about there being room enough for it, if you could get it in there? A. There might still be a question.

The Court: What is that?

The Witness: There might still be a question.

The Court: What is that?

The Witness: There might still be a question.

Q. Well, all right, disassemble that device and put the bushing in and let's see if there is room enough for it!

A. Yes (performing operation), there is room enough for it.

330 Q. Now, will you please assemble Exhibit J as it was when I handed it to you, and also return the tag to Exhibit E? A. (Witness complies.) You say Exhibit 17 you want me to assemble?

Q. Assemble Exhibit J just as it was when I first handed it to you.

The Court: Well, Exhibit 15 is being inserted now.

Mr. Fassett: Correct, your Honor.

Q. Now, will you please tie the tag back on Exhibit J?

A. (Witness complies.)

Q. Now, will you tie the tag back on Exhibit E? A. Which one?

Q. The red bushing.

The Court: Put the two of them on the same tag.

Q. Put the two of them on that same tag, inasmuch as they have been interchangeably referred to as Exhibit E. They are just the same except for the color of the material from which they are made.

Mr. Crews: And they are both put in evidence as Exhibit E?

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Mr. Fassett: Yes.

The Court: Exhibits E-1 and E-2, if you please; the red as Exhibit E-1 and the black one be referred to as Exhibit E-2.

The Witness: I am afraid they won't stay on. They have been spread, and they won't stay.

The Court: The clerk will take care of that.

Q. Mr. Latzer, do you know whether or not the Walker cable has ever been approved for use in New York City by the New York Board of Fire Underwriters? A. I don't know.

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The Court: Well, is it used in buildings?

The Witness: Yes, sir.

The Court: And do you know of your own knowledge whether certificates have been issued upon the completion of the buildings or the completion of the alterations of the buildings wherein Walker cable has been used?

The Witness: No, I do not, your Honor.

Q. If you used Walker cable in connection with the connectors in which we have been interested here, you would

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Frederick Latzer—For Defendants—Cross.

have to have a peep-hole connector, would you not, to determine whether the tape had been wound about the conductors properly? A. No, I don't believe so.

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Q. Where is that piece of Walker cable we had yesterday? (Cable produced.) The Walker cable is Exhibit K. How could you tell, without a peep-hole connector, whether or not the tape provided, as I understand, for the purpose of wrapping about the conductors, and being tucked in between the conductors and the inside surface of the armored cable, as you testified yesterday, how could you tell whether that tape had been so tucked in without a peep-hole connector, without disassembling the device to find out? A. Yes. The fibre tape projects beyond or should project beyond the mouth of the connector.

Q. Then, the tape of the Walker cable would be seen? A. Yes.

Q. That would be the only way? A. Yes.

Q. I believe this morning you testified about connectors of the type we have here, used in connection with raceways? A. Yes.

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Q. Mr. Latzer, what do you mean by raceways? A. A raceway is a hollow form or enclosure through which conductors are drawn or they may be inserted.

Q. Cable of the Walker type has the conductors and jacket made as a unit and sold by the foot, does it not? A. That is right.

Q. That is not such a raceway? A. It is not a raceway.

Q. And the other cable similar to that on Exhibit J is also made with the sheathing? A. Yes, sir.

Q. And the conductors together? A. Yes, sir.

Q. And the cables attached to Exhibit 16 are similarly made, are they not? A. They are.

Q. In none of these exhibits are the wires drawn through the conduit afterward? A. No, sir, they are not.

The Court: You would not call any of these cables, then, raceways?

The Witness: We do not refer to them as such, your Honor.

Q. You mentioned something about the Greenfield not being a conduit, I believe? A. No.

Q. Or something? A. I said the Greenfield is a conduit.

Q. Greenfield is a conduit? A. Yes.

Q. Greenfield is such a raceway, is it? A. That is right. 338

Q. Do you know how Greenfield raceways, if you will, or conduits, are prepared in practice before they are inserted into a connector as we have here? A. They cut—they are cut square with a hacksaw and they are reamed, the inside of a Greenfield is reamed of any rough burrs that may be present due to the cutting operation.

Q. Yes, and where they prepare solid type or rigid conduits such as you have testified to, they usually ream the mouths of those, don't they? A. They must.

Q. They must do that? A. They must do that.

Q. Now, of course, in using cables as we have here, you cannot ream them out, can you? A. No, you cannot. 339

Q. And so it makes it necessary to have some protection for the burr which is occasioned by cutting the armor off a portion of the wires, doesn't it? A. That is right.

Q. Do you know of any other expedient in connection with the use of the Greenfield conduit for preparing the end of that conduit for use? In connection with that I call your attention to the patent No. 640,758, issued January 9, 1900, to E. T. Greenfield. A. Just what is the question?

Q. (Question read.) A. I don't quite tie up this patent with your question.

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Frederick Latzer—For Defendants—Re-direct.

Q. Well, I will call your attention to Figure 1, in which a bushing C is shown, and at line 63 of the specification it says:

“My present improvement is designed to overcome this objectionable feature, and to this end I form an expansible metallic bushing C.”

I will ask you if that bushing C is not designed to go into the end of that conduit and finish the end of it? A. It evidently is so designed.

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(The Greenfield patent referred to by the witness was thereupon offered and received in evidence as Plaintiffs' Exhibit 31.)

Re-direct Examination:

Q. Mr. Latzer, in this assembly of Exhibit J, could you know whether or not the bushing were inside the cable if you knew before that bushing were put in the shape and size of the bushing? A. Not with absolute certainty.

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Q. Why not? A. If the cable is incorrectly inserted—poor workmanship or any other reason, but incorrectly—that is, if it is not seated against the inside shoulder of the connector, there is a possibility that the insulating bushing inserted from the front may not seat inside of the armor.

Q. If the connector and cable were properly assembled, then you would know? A. Absolutely.

Q. Why did the bushing of Exhibit E not go down with the ring underneath the fingers when you tried to assemble it? A. The ring evidently—the bead evidently was larger than the opening of the connector. It is possible that under proper circumstances with somebody skilled in using the bushing it might have been so inserted.

Q. It was simply a matter of the size of that particular bushing and the size of that particular connector? A. That is right.

Q. As long as an assembly such as Exhibit J, but using one of the bushings of Exhibit E, is properly made, does it make any difference whether the bushing is put in first or last? A. Not in my opinion.

Q. That is, once the job is completed the assembly is there? A. That is right.

Q. And the assembly is the same no matter what the order in which the job is done?

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Mr. Bohleber: I object to such line of question as grossly leading.

The Court: Yes, sustained.

Q. I hand you a book and ask you what it is, if you know? A. I recognize it as the list of approved fittings issued by the Underwriters Laboratories, Inc., as of May, 1937.

Q. What Underwriters' Laboratories is this? A. It is the Laboratories of the National Board of Fire Underwriters.

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Q. Then, does that mean that those are fittings that are approved by this National body? A. That is correct.

Q. And can you tell me by referring to this book whether or not—

The Court: Let's mark that for identification.

(The book was thereupon marked for identification as Defendants' Exhibit L.)

Q. And can you tell me by referring to this book whether or not the Walker cable, which is Exhibit K, is approved by this body? A. Yes.

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Frederick Latzer—For Defendants—Re-direct.

Q. Will you please read what you find in there with regard to it? A. On page 9, under the heading of "Armored Cable and Cord," in the column 2 at page 9, there appears the following:

"Walker Bros., Conshohocken, Pennsylvania. Marking letter Y stamped in armor at frequent intervals. Impressions in armor at frequent intervals and red tape under armor."

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That corresponds to the sample that you had me examine, which appears as Exhibit K, I believe.

Q. And is this approval of this body an approval for the entire United States? A. It is so far as I know. There may be exceptions. I don't know of any.

Q. You mean there may be local code rules or local bodies that would not approve it, but this approval goes for the entire United States? A. There may be, yes.

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Q. Mr. Latzer, can you tell me whether the method of operation as shown in Exhibit 31 is the method that is in use today? A. No, it is not. The use of a bushing as shown in this patent does not appear to be necessary. I know it is not so used in the trade generally, because of the fact, as I have testified before, the inside edge of this conduit is reamed out and the presence of a bushing on the inside would serve as a deterrent and make it difficult to pull wires through this conduit if it is in place.

The Court: So that would you say that the conduit shown on this patent is a raceway?

The Witness: Yes, sir.

Q. Why do you prefer to insert the bushings from the inside of the box after the connector is in place, as you did in connection with Exhibit J? A. Practical considera-

tions have led me to that preference. These outlets of this type, in fact of any type in which armored cable is used, are located in a great majority of instances; I would say in ninety per cent. of the cases, in locations where efficient inspection even with the best of intention is very difficult. I refer, for instance, to what we know as base receptacle outlets, that is, plugging outlets which are located twelve inches or so above the floor generally, of which a large number, a very large number are present in every operation. I refer also to the location of outlet boxes on the ceiling, and they may be anywhere from eight feet or more above the floor. And there are, of course, in every box a large number of wires present, maybe as high as twelve, maybe more, and the combination of conditions, that is, the comparative inaccessibility of those outlets to even a conscientious inspection, practically makes it impossible to see the bushing through these peepholes, and this bushing is on the inside of the connector. The bushing in that position, even with this peephole connector, is visible only from practically directly over it, and at best there is visible only a matter of one-sixteenth or one-eighth of an inch of this bushing, and when these outlet boxes are located in difficult positions, that is, where they cannot readily be seen, my experience has been that the tendency is to eliminate the bushing entirely, to insert it ~~only~~ in the places that the inspector is most likely to look, that is, switch outlets, for instance, which are about four feet in height, generally, where obviously the inspector will make an inspection. And I prefer to see the bushing, that is, to have the bushing on the outside, because then I know at least that there is a bushing there even though the bushing may not be entirely within the armor, or at least there is no assurance that the bushing has penetrated the

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armor, but the bushing is there and it is visible on most casual inspection in almost any kind of location.

Q. Do you mean to imply that it would be likely that the bushing would not be within the armor? A. The bushing would be within the armor ordinarily, and I would say that in practically every case the bushing would be within the armor. I take it that you are referring to the instance in which the bushing is inserted from the mouth of the connector?

Q. Yes. A. Yes; because the actual way of installing these in place is to seat the armor against the inside bead of the connector in order to make a solid and substantial job, and in order that the cable may not slip out from under the connector, so that with the armor seated against the bead of the—the shoulder, I would say, of the connector, it is absolutely certain that the insulating bushing is seated within the armor.

Re-cross Examination:

Q. Mr. Latzer, who have you talked to about the testimony you have given here in this case today? A. Mr. Crews.

Q. Who else? A. Nobody.

Q. I want you to think carefully, please, and name anyone else besides Mr. Crews with whom you have talked about the testimony you have given here in this court? A. Today?

Q. At any time. A. Well, your question was today.

Q. Well, I will make it now any time. A. To Mr. Joselson.

Q. Anyone else? A. Not to my recollection.

Mr. Bohleber: With reference to the Joselson Sales Corporation, it is stipulated as follows:

That the directors of this corporation since Feb-

ruary 10, 1933, were and are Samuel Joselson, Belle Joselson and Jack Joselson; that Jack Joselson is the brother of Samuel Joselson; that according to the minutes of the third meeting of the Board of Directors on March 23, 1935, the capital stock was increased from 50 to 250 shares or from \$5,000 to \$25,000; that on February 16, 1933, there were issued to Belle Joselson 10 shares of the capital stock of this corporation; that there were issued to Belle Joselson on December 15, 1933, an additional 30 shares of the capital stock of this corporation and on the same date there were issued to Samuel Joselson 10 shares of the capital stock of this corporation; that on April 2, 1935, there were issued to Belle Joselson 5 shares of the capital stock of this corporation and on the same date there were issued to Samuel Joselson 70 shares of the capital stock of this corporation, thus making Belle Joselson's holdings 45 shares and Samuel Joselson's holdings 80 shares as of April 2, 1935.

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The Court: That was half of the stock?

Mr. Bohleber: Yes, that is right.

The Court: 125 out of 250.

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Mr. Bohleber: That is right. It is further stipulated that the minutes of this corporation further shows that at a fourth meeting of the directors thereof a resolution was adopted to wind up the affairs of this corporation not later than June 15, 1935, but that these minutes are undated and unsigned.

With reference to Electrical Fittings Corporation it is stipulated:

That the directors since shortly after the organization of this corporation were and are Samuel Joselson, Irving G. Trattler, and Edwin J. Schnei-

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der; that Samuel Joselson, President of the Joselson Sales Corporation, turned over his equity of about \$12,000 to the above Corporation in return for 50 shares of stock; that according to the stock book, the share holdings from the date of the first meeting of the directors of the Corporation on June 3, 1935, were as follows: Samuel Joselson 50 shares, Irving G. Trattler 25 shares, and Edwin J. Schneider 25 shares; that the minute book shows that meetings were held by the directors on December 16, 1935, November 10, 1936, March 15, 1937, and on May 15, 1937, and that at the fifth meeting on May 15, 1937, there was an additional distribution of capital stock as follows: Samuel Joselson 16 shares, Irving G. Trattler 8 shares, and Edwin J. Schneider 8 shares, thus making the stock holdings as of May 15, 1937, as follows: Samuel Joselson 66 shares, Irving G. Trattler 33 shares, and Edwin J. Schneider 33 shares.

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With reference to the Efeor Sales Corporation it is stipulated:

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That the directors of this corporation from the date of the first meeting on February 15, 1937, and throughout the existence thereof were and are Irving G. Trattler, Edwin J. Schneider, and Samuel Joselson, and that the officers of the corporation were and are Irving G. Trattler, President & Secretary; Edwin J. Schneider, Vice-President; and Samuel Joselson, Treasurer; that the capital stock issued as of February 15, 1937, was as follows: Samuel Joselson 30 shares, Edwin J. Schneider 15 shares, Irving G. Trattler 15 shares; that there have been no meetings of this Corporation other than the first meeting on February 15, 1937.

Mr. Crews: Has the plaintiff now rested?

Mr. Fassett: Yes, plaintiff rests.

(There was thereupon offered and received in evidence a booklet of prior art patents including a copy of the patent in suit, Fullman, 1,769,947, Frederickson Patent 1,687,013, Geohst, *et al.*, 681,416, Klein, 799,989, Freeman, 848,819, Hinsdill, 849,395, Gilbert, 949,628, Appleton, 1,192,150, Webster, 1,245,077, Casper, 1,279,256, and Perry, 1,585,688.)

(The defendants thereupon rested their case.)

PLAINTIFFS' REBUTTAL PROOFS.

(There was thereupon offered and received an abstract of the file wrapper and contents of the application which eventuated into the patent in suit, James M. G. Fullman, No. 1,769,947, as Plaintiffs' Exhibit 32.)

Mr. Fassett: If your Honor please, we would like to have permission to substitute a certified copy of this file wrapper and contents, which we do not have here today.

The Court: I suppose there is no objection to that.

Mr. Crews: No objection to that, no, sir.

JOSEPH G. FORSYTH, called as a witness on behalf of the plaintiff in rebuttal, being first duly sworn, testified as follows:

Direct Examination:

Q. Mr. Forsyth, will you state your age, residence and occupation? A. Age, 76, residence 406 Jefferson Avenue, Brooklyn, New York, consultant with the Electrical Bureau of the New York Board of Fire Underwriters at the present time.

Q. How long have you been connected with that Electrical Bureau of Fire Underwriters? A. A little over 46 years.

Q. Is that sometimes called the New York Board of Fire Underwriters? A. It is.

Q. What was the nature of your duties while employed by the New York Board of Fire Underwriters? A. For forty years I was in charge of the electrical inspection department of the New York Board of Fire Underwriters. Prior to that time I was an inspector for some years doing field work in the field. As chief inspector and supervising engineer of the Board, I looked after the details of the department, consulted with contractors, manufacturers, supply dealers and others interested in the electrical field, and tried the best I could to settle disputes and to give interpretations of the code and of the rulings of the inspectors and others.

Q. Did you say you were an inspector yourself at one time? A. Yes.

Q. How long were you an inspector? A. About four years.

Q. After the period of four years when you were an inspector, what did you do thereafter? A. I had general charge and supervision of the Electrical Department, looking after the men and their reports, and also made many inspections myself personally in the field.

Q. What men are you referring to? A. Our inspectors.

Q. How many inspectors did you have under you at any one time? A. I had one time 91 outside inspectors.

Q. What educational training have you had? A. Well, I graduated from the Ohio Normal University at Ada, Ohio. Took a year's course in Parsons' College, Fairfield, Iowa, and a course in higher mathematics at Johns Hopkins University.

Q. Mr. Forsyth, did you hear defendant's expert wit-

ness, Mr. Latzer, testify in connection with Defendants' Exhibit J? A. I did.

Q. I now show you that exhibit and call your attention to the following testimony given by him at page 112 of the record. The question was:

"Q. Does that method of inserting the bushing in this combination satisfy the Code requirement?" and the answer was: "I believe it does."

Now, what is your opinion as to whether or not that method satisfies the Code requirement? A. Technically, as inserted, it probably would comply, but it is not an approved method of assembly such as we would require. 368

Q. Why not? A. Because there is nothing in this except the spread of the conductors to prevent that bushing from shaking out or being withdrawn.

Q. Can you tell from an inspection of it whether those bushings were located between the conductors and the cable? A. As assembled here, it is apparent that this is inserted between the armor and the insulation, but inserting the bushings after the assembly of the box and cable, you could not in all cases be sure that the bushing is properly inserted so as to protect the conductors from the sharp edges of the armor of the cable. 369

Q. Now, Mr. Forsyth, when he testified as follows:

"Q. And if the bushing were installed in that manner, with a connector of the type of Exhibit 17, would it be visible?" and the answer was: "It would." What is your opinion as to that?

The Court: Well, now, first of all, you better show that this witness knows what is referred to by Exhibit 17.

Mr. Bohleber: Oh, yes.

The Court: That is the old type connector.

Q. I now show you Plaintiffs' Exhibit 17 (handing).

A. What was the manner of inserting this bushing?

Q. Well, now, you recall I asked you—my previous question was that Mr. Latzer had testified as follows:

"Does that method of inserting the bushing in this combination satisfy the Code requirement?" and he was there referring to this Exhibit J, and his answer was: "I believe it does," and then you testified about that, as to whether you thought that was right or not.

371 Now then my next question is: "And if the bushing were installed in that manner with a connector of the type of Exhibit 17, would it be visible?" and the answer was: "It would." What is your opinion about that? A. It would be visible, but it would not be a proper method of installation.

Q. Now, Mr. Latzer went on to testify as follows, still at page 113:

372 "Q. Why do you consider the method of assembling of Exhibit J preferable to that of Exhibit 16?" and this is Plaintiffs' Exhibit 16, which I now show you. His answer was: "The function of the bushing in Defendants' Exhibit J has been not only to form an insulator between the conductors and the armor but has also formed an insulator between the conductors and the edge of the connector, the mouth of the connector."

Now what is your opinion as to the preferable assembly of Exhibit J as compared to Exhibit 16?

Mr. Crews: If your Honor please, I object to that. Mr. McMurtrie has already testified in agreement with Mr. Latzer on that point.

The Court: Overruled.

Mr. Crews: Exception.

A. The method of assembly as shown in Exhibit 16 is the preferable way, and in fact is the required way at the present time.

Q. Would you say—I will ask you again, would you say that Exhibit J would pass inspection of the Board of Fire Underwriters? A. It would not.

Q. And why not? A. Because of the probability or possibility of the bushing, due to vibration or other causes, coming out of the end of the connector and thus doing away with the protection that is supposed to be afforded.

Q. Do you know anything about the Advisory Board of Engineers of New York City? A. I happen to be a member of that board.

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Q. And what is that board? A. A board that was created a good many years ago having representatives on it from the Electrical Inspection Department of the Department of Water Supply, Gas and Electricity, representatives from the Electrical Bureau of the New York Board of Fire Underwriters.

Q. Mr. Latzer also testified at page 117 to the effect that he was quite sure that the Walker cable, Defendants' Exhibit K, would satisfy the code. Does it satisfy the code of the New York Board of Fire Underwriters? I now show you Defendants' Exhibit K. A. This cable was, as all such materials are, presented to the Advisory Board for consideration and action, and the result of such consideration by this Advisory Board did not indicate that this was a suitable material for use, due to several conditions.

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Q. What are those conditions? A. I beg your pardon?

Q. What are those conditions? A. In the first place, it is a difficult matter, unless a man is trained, to properly protect the end of this connector by this strip of fibre, and it is only a man after a good deal of experience; that can properly fold this over and perform the operation properly. And second, this insulation, even if not properly assembled, presents a sort of a bump or a bunch of insulating material on the end of the cable,

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Joseph G. Forsyth—For Plaintiffs—Rebuttal—Direct.

thus separating it and insulating it from the connector, which is a very undesirable thing.

Q. Will you please tell me what the advantage of a connector is which permits of ocular inspection to determine whether or not a bushing is used? And in that connection you may refer again to Plaintiffs' Exhibit No. 16. A. It provides a much easier and more ready view of the insulating bushing.

Q. You have seen, have you not, the National Electrical Code, Plaintiffs' Exhibit No. 18 for identification? A.

377 Yes.

The Court: Show it to him, why don't you? He may look at it so that he will know it is the same one with which he is familiar.

Q. At page 52 of this code appears Section 505-g of Article 5, which I now show you and ask you whether there was a similar requirement by the Board of Fire Underwriters of New York City prior to 1933? A. No, there was not.

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Q. Do you know what the situation is in New York City with respect to the use of connectors like Plaintiffs' Exhibit 17? A. Well, there are still many of them being used. I was surprised to find on looking over the records, that no orders had been issued to require the open end connector, but that is due to the fact that perhaps the change of administration when I went off the active list of the Board and my successor hasn't got through with the other administrative features. It is customary and always has been customary that where a change in design of a device is required by the Code, that we do not enforce the new design for a long time, depending upon its importance and on whether or not we find that the industry is so loaded up with the old devices that it would be a hardship to rule them all out.

so that we admit the continuation of the use of the old type pending the distribution of the existing supplies from manufacturers and jobbers and contractors, but as yet the order for open type connectors has not yet gone out.

The Court: You say it has not or you don't believe it has?

The Witness: No, it has not.

The Court: It has not?

The Witness: It has not.

Q. To what extent is armored cable used in New York City? A. Well, in New York City perhaps its use is not as extensive in proportion as in outlying sections, as the Electrical Department of the New York Board of Fire Underwriters also has supervision over the electrical equipment in Suffolk and Nassau Counties of the Island; Westchester, Putnam and Rockland Counties up-State, and I should say that with the exception of the last four or five years the armored cable would constitute twice the footage of all of the other rigid or flexible conduits combined.

Q. What do you know about the extent of the use of the Greenfield cable in New York City? A. It is very limited.

Q. I now show you Plaintiffs' Exhibits Nos. 1 and 2, and ask you, if you saw a customer who had a supply of connectors like Plaintiffs' Exhibit No. 2, where you would expect that they would be intended to be used and how?

Mr. Crews: I object, your Honor. It seems to me that it is very—

The Court: I will sustain the objection to the form of that question. In view of the experience

382 Joseph G. Forsyth—For Plaintiffs—Rebuttal—Cross.

that this witness has had, it seems to me that you might undertake to show by him either that there are other connectors besides this type of connector in Exhibit 17, or that there are not, so far as he knows, or that you might undertake to show by him whether he knows of the use of the connectors of the types of 1 and 2 and 17 for more than one purpose?

Mr. Bohleber: Well, I will withdraw the question, your Honor.

383 The Court: But where he would expect it to be used, that is speculative.

Q. Do you know any other use of Plaintiffs' Exhibits 1 and 2 other than the uses similar to that shown in Plaintiffs' Exhibit 16? A. I do not.

Cross Examination by Mr. Crews:

384 Q. Mr. Forsyth, I noticed that when you were examining Exhibit J it was in the condition that it now is, that is, the bushing is not down inside the connector. It is my recollection that when we stopped discussing Exhibit J yesterday the bushing was in the connector? A. I pulled it out.

Q. Oh, you pulled it out when you were talking? A. Yes.

Q. And your testimony with respect to relative visibility of the bushing, and so forth, was after you pulled it out, or while it was still in place? A. No, it was still in there, perfectly visible. Its visibility is not the object of the bushing.

Q. That is the Code requirement, isn't it? The specific Code requirement is that bushings be used and that they be visible? A. It is at the present time, yes. May I add that our inspectors are instructed to always ascertain

whether the bushings are or are not in place, no matter what form of connector may be used.

Q. Well, if this bushing—I will now push it back in again the way it was left yesterday, if I can; I never did this before. There it is. Now, what would make that bushing fall out if it were connected in a building, the job was done and it was left? A. Well, there is a lot of vibration in many buildings, and the installation of the bushings in this manner would be performed by the mechanic after the job was finished, if at all, and there is nothing except a visual examination of each and every outlet to see whether or not the bushing has been provided, and unless this armor is seated tightly up against the shoulder of the connector, it is possible for that bushing to spread out over the outside armor of the cable and not go inside of it at all.

386

Q. Have you examined the relative dimensions of the cable and the diameter at the inside of the fingers of these connectors of this type? A. I don't believe that I have.

Q. Mr. Latzer testified that it was a physical impossibility to push one of these bushings through the connector after the connector and cable had been put together, and a physical impossibility to keep the bushing from going inside the cable. Now, would you mind again removing that bushing and looking over the dimensions and see what you think of that statement? A. Well, what do you want me to do?

387

Q. Suppose you see if you can put that bushing in place there without putting it inside the cable. A. Not as assembled.

Q. Well, I understood you to say that if the cable and connector were assembled first and the bushing put in place afterwards there would be danger of the bushing not going inside the cable. A. I qualified that by

saying if the assembly had not been properly made up by the mechanic on the job.

Q. And if the armored cable is not seated properly against the connector, there is danger of it coming off, isn't there? A. What?

Q. The cable coming off. That would be a very sloppy job for a workman to do, would it not? A. Yes, but we have many sloppy workmen in the electrical business.

Q. But a good workman would never put one on in that manner? A. He would never put one on from the inside, no.

389

Q. No, I am talking about the cable and connector, and any workman would always be careful that the cable was up against the shoulder of the connector? A. Oh, yes, certainly.

Q. And you would not—the cases where the cable would be installed without being against the shoulder of the connector would be extremely rare, would they not? A. Well, I don't know. It has happened many times.

Q. You spoke of vibration causing that bushing to fall off, fall out. Isn't it a fact that in this courtroom right now on the walls of the courtroom there is practically no vibration? A. I haven't noticed any.

390

Q. Do you have in mind any particular vibration? It seems rather impossible to me that there could be such vibration as to make a bushing fall out. I would like to have you explain that. A. Well, in the house in which I live in Brooklyn the street has become a thoroughfare for heavy trucks, and often the whole house shakes from the passing of those trucks on the street, trembles.

Q. And that vibration could cause one of these bushings to come out? A. If inserted like that, without anything to hold it.

Q. You haven't pushed it all the way in now, when you have answered like that, you still haven't pushed it all the way in? A. I haven't tried to.

Q. There is a great deal of friction there, now that you are trying to, isn't there? A. Yes, there is quite a little.

Q. How recently have you done any actual inspection on jobs yourself? A. Oh, a couple of weeks ago.

Q. Have you done much recently? A. No, I don't go around very much on the outside.

Q. Have you seen any cases of bushings installed in the manner of Exhibit J? A. No.

Q. Then I suppose you could not tell us of having heard of any cases where any have fallen out? A. No, 392
did not say there had been any, but there is a possibility of that happening.

Q. Well, would you consider that a very strong possibility? A. Well, perhaps not, but why consider a possibility when you can insure the other and proper method of installation?

Q. You say proper method of installation. I understood you to testify that this method complied with the requirements of the Code? A. This method here?

Q. Yes, Exhibit J. A. It does in a sense.

Q. Do you expect your inspectors to go outside the Code in imposing requirements on electrical contractors? 393
A. They are expected to report any deviation from the Code to the office.

Q. And as long as they find the Code complied with, they are expected to pass the job? A. Yes.

Q. And when you say that this is not an approved method, you simply mean that you do not approve this method? A. That is right.

Q. Now, you were talking about these connectors like Exhibits 1 and 2, which we have been referring to as peephole connectors. I believe you referred to them as open end connectors; is that right? A. I could not think of the word "peephole" at the time.

Q. You were referring to the same thing? A. Yes.

Q. I just wanted to be sure we understood each other. Now, you said that the Board of Fire Underwriters had not yet gotten around to requiring that particular type of connector to be used. I take it that the Board of Fire Underwriters does not undertake to push any particular product except as may be necessary for safety reasons; that is correct, isn't it? A. That is right.

Q. It would not make any difference to the Fire Underwriters whether one manufacturer sold a lot of connectors or another? A. No.

395 Q. And your reason for approving these connectors in Exhibits 1 and 2, or of requiring them as against Exhibit 17, would be because of the visibility of the bushing? A. Right.

Q. The visibility, while definitely assuring that the bushing would stay in place? A. Yes.

Q. Well, don't you know, Mr. Forsyth, that there are other bushings that could be used with the connector of Exhibit 17 that would have visibility and be positively retained in place? A. I think there are one or two other forms. I don't remember just what they are.

396 Q. Well, if there are such other forms, why should the Board of Fire Underwriters rule this connector out entirely? A. It has not yet been done before the New York Board of Fire Underwriters, but has been done in the National Electrical Code.

Q. The connector of Exhibit 17 has been ruled out? A. Which? This one?

Q. Yes. A. The Code has indicated that it requires that the bushing shall be visible after insulation.

Q. I thought you just told us that you knew of other bushings that could be used with Exhibit 17 that would be visible? A. With this, you mean?

Q. No; this is Exhibit 17. A. Well, I think there is another bushing with a little rib around it that can be inserted between the armor and insulation of the cable

first and then that inserted in the connector and then the connector in the box.

The Court: Have you Exhibit E there?

Mr. Crews: Yes, sir.

The Court: Suppose you ask the witness if he is familiar with that bushing.

Q. I show you two bushings that have been identified as Plaintiffs' Exhibit E. Are you familiar with that type bushing? A. Yes, I have seen them.

Q. They could be used with Exhibit 17 and still be visible, could they not? A. Certainly.

Q. And there would be means for positively holding it in place? A. Right.

Q. And that bushing could also be used with Exhibit 1 or Exhibit 2, could it not? A. It could.

Q. It is well adapted for that purpose, is it not? A. It can be used for that purpose, yes.

Q. Is that also true of Exhibit F? A. Yes. Yes, I guess that could be used, although I have never seen that in actual use.

Q. Isn't it true, Mr. Forsyth, that the Walker cable is pretty widely in use in various parts of this country? A. I don't know. It is not used in New York City.

Q. The Walker people have been trying to get it approved in New York City, have they not? A. They did some time ago but were not successful.

Q. And didn't they make representations to that board at that time showing that it was approved and in wide use throughout the country? A. They made some statements to that effect which we did not and could not verify.

Q. Didn't they verify the statements? A. No, not to my knowledge.

Q. Well, you do know that it is used to some extent?

A. I have heard that it was. I have not seen it.

Q. And the connectors of Exhibits 1 and 2 are adapted for use with the Walker cable, are they not? A. Yes, I presume so.

Mr. Crews: That is all.

The Court: Have you anything further to ask Mr. Forsyth at this time?

Mr. Bohleber: No, nothing further.

The Court: I would like to ask him one or two questions.

401

By the Court:

Q. Mr. Forsyth, do you know of any other connectors in use similarly used to Exhibits 1, 2 and 17? A. Well, there have been many forms of connectors submitted and some approved and some not.

Q. Well, do you know of any that are in common use now or have been within the last five years? A. Other than the type shown?

Q. Other than those shown by Exhibits 1, 2 and 17? A. No, I could not say.

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Q. Do you know of any other use to which objects of the type of Exhibits 2 and 3 are put besides as connectors in the installation of electrical wires or conductors?

Mr. Bohleber: Your Honor, let me interrupt you. You mean 1 and 2, instead of 2 and 3, don't you?

The Court: 1 and 2, yes.

A. No, I do not.

Q. You don't know of any other use they are put to?

A. No, I do not.

The Court: All right.

ADNAH MCMURTRIE, recalled as a witness on behalf of the plaintiffs, in rebuttal, being previously sworn, further testified as follows:

Direct Examination:

Q. Mr. McMurtrie, have you marked your devices manufactured under the patent with the patent number or the patent date? A. We marked the containers, not the articles themselves.

Q. That is for the connectors which your company, Thomas & Betts Company, make; they mark them? A. Correct. 404

Q. As I understand it, the National Electrical Products Company had a license at one time under the patent in suit. Did it mark its device patented? A. It did mark the devices "Patented."

Q. And what about your other licensees? A. I don't know.

Cross Examination:

Q. Do you recognize that as a catalog put out by your company (handing)? A. Yes, sir. 405

Q. And this is the section of the catalog under the heading "Armored Cable Conn."? A. Probably.

Q. That refers to armored cable connectors? A. You are going to ask me if we mark the catalog with patent numbers?

The Court: No; just answer the question.

Q. The heading under the section "Armored Cable Conn." means armored cable connectors? A. Correct.

The Court: What page is that, or is there any designation?

406 Adnah McMurtrie—For Plaintiffs—Rebuttal—Cross.

Q. Does this mean page 6-E-1 that we referred to? A. Yes.

The Court: One minute. What is the page you just referred to?

Mr. Crews: The page with the heading on it, is an inset page, sort of a tabulation sheet marking the various sections.

The Court: I know, but how is anyone on appeal going to know what you refer to unless you make some designation of it?

Mr. Crews: Well, there is nothing on the page except what I read.

The Court: Well, all right. Suppose you mark that page for identification that you read from so we will know what you are talking about. If there is no number on it, state that.

Mr. Crews: It is a sheet stuck in the book following 6-D-1, page 4.

(The sheet was thereupon marked Defendants' Exhibit N for identification.)

408 Q. What do you call that page number I am now showing you? A. That is gotten out by the sales department. I don't think it had a number on it.

Q. Well, it is the next sheet following the one just marked for identification, is it not? A. Yes, sir.

Q. And that sheet shows the pictures of four connectors? A. Yes, sir.

Q. And each of them is marked "Patented"? A. Correct.

Q. Now, turning over to the other side of that same sheet, which is marked 6-E-1, page 2, we have pictures of five connectors; is that right? A. Correct.

Q. And three of them are marked "Patented"? A. Correct.

Q. On the next page, which is marked 6-E-1, page 3, we have pictures of five connectors? A. Yes.

Q. And one of them is marked "Patented"? A. Correct.

Q. The connector at the top of that page marked No. 40-V is one of the peephole type of connectors we have been concerned with here, is it not? A. Correct.

Q. Is it marked "Patented"? A. It is not.

Q. Do you know what kind of patent marking was put on these products you just testified were marked "Patented"? A. I have a sample there that shows stamping with a steel die.

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The Court: Well, that means with respect to those that were put out by the National Electrical Products Company?

The Witness: Yes. They own the patent.

The Court: What was the type of containers in which Thomas & Betts sold their connectors?

The Witness: They were a small container, containing about 50 of the connectors. These were taken off the filled containers yesterday at my instructions. I had seen them out there, and asked one of our employees to empty out the connectors and tear off the labeled end (hanging cardboards).

411

Q. May I see one of them?

The Court: How long have these particular end labels been in use?

The Witness: Since the time we took over the exclusive license.

Q. And would you mind giving us that date again? When we took our license?

Q. Yes. A. I don't remember.

412 Adnah McMurtrie—For Plaintiffs—Rebuttal—Cross.

Mr. Bohleber: That is of record.

The Witness: I really can't remember it. You have it there. You have the license. I think it was February 22, 1932, wasn't it? Anyway, you have the license.

Mr. Fassett: January 22, 1932.

Q. Do you recognize this object I am now handing you as a label from one of your boxes? A. Yes, ~~sq.~~

413 Q. And that is a label that contained connectors No. 240-V? A. Yes, sir.

Q. The ones such as I showed you in the catalog? A. That is not marked "Patented."

Q. What did you say? I didn't get the last remark. A. I said there is no "Patent" mark on that, is there?

(The label was thereupon offered and received in evidence as Defendants' Exhibit O.)

Q. A moment ago you said that there was a sample here of one of the connectors. Your attorney has handed me this. Is this the one you referred to? A. Yes, sir.

414

Mr. Crews: I offer that in evidence, and I call your Honor's attention to the fact that—no, I beg your pardon. There are two patent numbers on that. I did not see the other one. I will withdraw the offer.

Q. Can you identify that label, Exhibit O, as of any particular date? A. It is a very old label, probably before we had our license. We were manufacturing these prior to receiving the license and patent suit was threatened against us, when we got together with the manufacturer and took a license under the patent. You see the difference in color.

The Court: Well, when were these labels used, referring to Defendants' Exhibit O?

The Witness: Prior to our taking the license under the patent.

Mr. Crews: That is all, your Honor.

Mr. Bohleber: I think, your Honor, we will offer one of these box faces in evidence as Plaintiffs' Exhibit 33.

(One of the box faces was thereupon received in evidence as Plaintiffs' Exhibit 33.)

Mr. Bohleber: I think, your Honor, we had better offer this exhibit in evidence identified by the witness as having the patent mark on it. 416

The Court: That is the connector made by the plaintiff Thomas & Betts Company?

Mr. Bohleber: National Electric Products Company.

The Court: No, that was made by you, wasn't it?

The Witness: No, this particular connector was made by National Electric Products Company, the owner of the patent, and after we took over the patent it became a licensee.

(The connector was thereupon received in evidence as Plaintiffs' Exhibit 34.) 417

The Court: That has the patent on it?

The Witness: The patent date and number.

Mr. Bohleber: That is all, your Honor.

The Court: I would like to see that last exhibit, 33. Mr. Crews, what am I to understand is your contention with reference to the examination you made of the last witness with respect to the catalog, wherein you brought out from him that certain cuts bore the appellation "Patented" and others did not?

Mr. Crews: It shows, your Honor, that it was

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the practice of the plaintiff Thomas & Betts Company to mark "Patented" very widely through their book on everything presumably that is covered by a patent, but on the particular item we are concerned with here they did not mark it "Patented" in their catalog.

The Court: Well, you mean that there were certain cuts representing connectors that were marked "Patented" and certain ones that were not marked "Patented"?

419

Mr. Crews: Yes, your Honor, a great many marked "Patented," but the one showing the peep-hole connector was not marked "Patented."

The Court: That is Exhibit number—

Mr. Crews: I did not offer that in evidence. We had the testimony of the witness with respect to it. It shows at the very least, your Honor, that they are careless about their patent mark and tends to confirm Mr. McMurtrie's—

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The Court: I don't know whether I would be warranted in drawing any such inference, because there isn't anything before me to indicate what those items are that are marked "Patented" and what those items are that are not marked "Patented." It may very well be that there is no claim to be made, I don't know, by the plaintiffs that the defendants sold any of the articles which, according to that catalog, are not marked "Patented." I can't tell that. Now, neither is there any proof here that defendant or any of the defendants when they bought these connectors purchased them in boxes with these labels on them. All right.

Mr. Crews: Has the plaintiff rested?

Mr. Bohleber: The plaintiff rests..

DEFENDANTS' SUR-REBUTTAL PROOFS.

FREDERICK LATZER, recalled as a witness on behalf of the defendants, in sur-rebuttal, being previously sworn, further testified as follows:

Direct Examination:

Q. Mr. Latzer, I show you Plaintiffs' Exhibit 18. That is the National Electrical Code for what year? A. 1933. 422

Q. And I hand you a book and ask you what it is? A. It is the National Electrical Code for the year 1935.

Q. Will you please read a section beginning on page 57, Article 5, Section 505, Subsection d from that code?

A. (Reading): "At all points where the armor terminates, an approved fitting shall be provided to protect wires from abrasion, unless the design of the outlet boxes or fittings required by paragraph a of section 512 is such as to afford equivalent protection, and in addition, an approved insulating bushing or its equivalent approved protection shall be provided between the conductors and the armor. The connector or clamp by which the armored cable is fastened to boxes or cabinets shall be of such design that the insulating bushing or its equivalent will be visible for inspection. This bushing will not be required with lead-covered cables." 423

Q. And that last sentence is new in this code with respect to the 1933 code? A. Yes; it was not there in the 1933 code.

Q. Can you tell us what lead-covered cables are? A. Yes.

Q. Before you do that—

424 *Frederick Latzer—For Defendants—Sur-Rebuttal—Direct.*

(The Code Book for 1935 from which the witness had just read was thereupon offered and received in evidence as Defendants' Exhibit P.)

The Court: That is 1935?

Mr. Crews: Yes, sir.

The Witness: May I have the question?

425 Q. (Read by stenographer.) A. Lead-covered cables are insulated conductors around which either singly or in an assembly of more than one conductor there is placed a lead protection, the purpose of the lead protection being to provide protection against moisture, very largely. In an armored cable this lead covering would be placed over the conductors and under the armor, that is between the armor and the conductor assembly.

Q. Then if I may paraphrase your testimony, would it be correct to say that lead-covered cable is BX except that there is lead between the conductors and the cable?

A. That is correct.

Q. Is this lead-covered cable something that is in use?

A. Oh, yes.

426 Q. And is it used with connectors of the types of Plaintiffs' Exhibits 1 and 2? A. It is.

(Whereupon Plaintiff and Defendants rested.)

Stipulation and Order Approving Narrative Statement
of the Evidence.

[SAME TITLE]

IT IS STIPULATED between the attorneys for the parties hereto, subject to the approval of the Court, that the following is a true and correct transcript of the record of the District Court in the above-entitled matter (testimony of witnesses being, with certain exceptions, stated in narrative form), and may be treated and considered as the record of the trial of said cause in making up the transcript of the record on appeal.

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BOHLEBER & LEDBETTER,
Attorneys for Plaintiffs.

DARBY & DARBY,
Attorneys for Defendants.

IT IS SO ORDERED:

MURRAY HULBERT,
U. S. D. J.

429

New York, New York, November , 1938.

Plaintiffs' Exhibit No. 3.

UNITED STATES DISTRICT COURT,

SOUTHERN DISTRICT OF NEW YORK.

**THE THOMAS & BETTS Co., a corporation,
and NATIONAL ELECTRIC PRODUCTS COR-
PORATION, a corporation,**

Plaintiffs,

vs.

**ELECTRICAL FITTINGS CORPORATION, a cor-
poration, JOSELSON SALES CORPORATION,
a corporation, and SAMUEL JOSELSON
and BELLE JOSELSON, individuals,**

Defendants:

**Equity
#81/229.**

**U. S. Letters
Patent to
Fullman
1,769,947.**

**INTERROGATORIES FILED BY PLAINTIFFS PURSUANT TO EQUITY
RULE 58 TO BE ANSWERED UNDER OATH BY THE
PRESIDENT OR OTHER QUALIFIED OFFICER OF THE
DEFENDANT COMPANY.**

INTERROGATORY No. 1:

State the names of all defendants who, subsequent to the granting on July 8, 1930 of the patent in suit and prior to the filing of the bill of complaint, in the Southern District of New York, or elsewhere in the United States, have sold or caused to be sold

- (a) Set Screw Connecters like Plaintiffs' Exhibit 1, and/or

) Squeeze Connecters like Plaintiffs' Exhibit 2, or either of them, which exhibits are now in the custody of plaintiffs' attorneys and which are available for inspection by the defendants' attorneys at any reasonable time.

EROGATORY No. 2:

the answer by any or all of the defendants to Interrogatory No. 1, or any part thereof, is in the affirmative

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) which of the alleged licensee companies of the plaintiffs, named in paragraph 8 of defendants' answer, sold, respectively, the connectors referred to therein,

) the name of the defendant purchasing the same, and

) the date or dates when said connectors, respectively, were so purchased.

EROGATORY No. 3:

435

state all the dates subsequent to the granting on July 30 of the patent in suit and prior to the filing of bill of complaint, on which cable connectors similar to those charged to infringe the patent in suit were purchased by the defendants or either of them from Apple Electric Company of Chicago, Illinois, and as to each purchase date state the name of the purchaser-defendant.

EROGATORY No. 4:

state all the dates subsequent to the granting on July 30 of the patent in suit and prior to the filing of

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Plaintiffs' Exhibit No. 3.

the bill of complaint, on which cable connectors similar to those charged to infringe the patent in suit were purchased by the defendants or either of them from Steel City Electric Company of Pittsburgh, Pennsylvania, and as to each purchase date state the name of the purchaser-defendant.

INTERROGATORY No. 5:

437 State all the dates subsequent to the granting on July 8, 1930 of the patent in suit and prior to the filing of the bill of complaint, on which cable connectors similar to those charged to infringe the patent in suit were purchased by the defendants or either of them from Conduit Fittings Corporation of Chicago, Illinois, and as to each purchase date state the name of the purchaser-defendant.

INTERROGATORY No. 6:

438 State all the dates subsequent to the granting on July 8, 1930 of the patent in suit and prior to the filing of the bill of complaint, on which cable connectors similar to those charged to infringe the patent in suit were purchased by the defendants or either of them from Sterling Manufacturing Company of Connecticut, and as to each purchase date state the name of the purchaser-defendant.

(sgd) BOHLEBER & LEDBETTER,
Attorneys for Plaintiffs.

Dated: December 23rd, 1935.
fad

Plaintiffs' Exhibit No. 4.

UNITED STATES DISTRICT COURT,

SOUTHERN DISTRICT OF NEW YORK.

**THE THOMAS & BETTS Co., a corporation,
and NATIONAL ELECTRIC PRODUCTS COR-
PORATION, a corporation,**

Plaintiffs,

vs.

**ELECTRICAL FITTINGS CORPORATION, a cor-
poration, JOSELSON SALES CORPORATION,
a corporation, and SAMUEL JOSELSON
and BELLE JOSELSON, individuals,**

Defendants.

Equity

#81/229.

U. S. Letters

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Patent

Fullman

1,769,947.

DEFENDANTS' ANSWERS TO INTERROGATORIES.

For answer to the interrogatories propounded by the
plaintiffs in this cause, defendants, by Samuel Joselson,
President of Electrical Fittings Corporation, state as fol-
lows:

441

1. The answer to Interrogatory No. 1 is Joselson Sales
Corporation and Electrical Fittings Corporation.

2. The answer to Interrogatory No. 2(a) is—

Appleton Electric Company

Steel City Electric Company

Sterling Manufacturing Company

Chicago Steel Tank Company (predecessor of Con-
duit Fittings Corporation).

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Plaintiffs' Exhibit No. 4.

The answer to Interrogatory No. 2(b) is Joselson Sales Corporation and Electrical Fittings Corporation.

3. The answer to Interrogatory No. 2(c) and Interrogatories Nos. 3 to 6 inclusive, insofar as defendants are required to answer these interrogatories under the order entered herein, is as follows:

Cable connectors similar to plaintiffs' Exhibits A or B were purchased by the Joselson Sales Corporation from the companies named below in the months shown.

443

Steel City Electric Company	April	1935
	May	1935
	June	1935
Chicago Steel Tank Company	November	1934
	December	1934
Sterling Manufacturing Company	February	1933
	March	1933
	October	1933
	November	1933
	December	1933
	January	1934
444	February	1934
	March	1934
	May	1934
	June	1934
	July	1934
	August	1934
	September	1934
	October	1934
	November	1934
	December	1934
Appleton Electric Company	March	1935

Cable connectors similar to plaintiffs' Exhibits A or B were purchased by Electrical Fittings Corporation from the company named below in the months shown.

Steel City Electric Company	July	1935
	August	1935
	September	1935
	October	1935

ELECTRICAL FITTINGS CORPORATION,

By SAMUEL S. JOELSON,

Its President.

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County of New York }
State of New York } ss.:

On this 1st day of February, 1936, before me personally appeared SAMUEL JOELSON of ELECTRICAL FITTINGS CORPORATION, known to me and who signed the foregoing Answers to Interrogatories in my presence and swore that the answers were true to the best of his knowledge and belief.

447

ROSE A. BATTERMAN,

Notary Public:

(Seal)

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Plaintiffs' Exhibit No. 5.

UNITED STATES DISTRICT COURT,

SOUTHERN DISTRICT OF NEW YORK.

THE THOMAS & BETTS Co., a corporation,
and NATIONAL ELECTRIC PRODUCTS COR-
PORATION, a corporation,

Plaintiffs,

vs.,

ELECTRICAL FITTINGS CORPORATION, a cor-
poration, JOSELSON SALES CORPORATION,
a corporation, and SAMUEL JOSELSON
and BELLE JOSELSON, individuals,

Defendants.

Equity

81,229.

U. S. Letters

Patent

Fullman

1,769,947.

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DEFENDANT'S FURTHER ANSWER TO INTERROGATORIES.

By agreement of counsel defendant gives further an-
swers to plaintiff's interrogatories as follows:

450

1. Wherever the previous answers to interrogatories re-
ferred to plaintiffs' Exhibits A and B this should have
been plaintiffs' Exhibits 1 and 2 respectively, and the
previous answers are to be so interpreted.

2. The particular set screw connectors which constitute
plaintiffs' Exhibit 1 were purchased by Joselson Sales
Corporation from Steel City Electric Company in April,
May or June, 1935.

3. The particular squeeze connectors which constitute
plaintiffs' Exhibit 2 were purchased by Joselson Sales

poration from Chicago Steel Tank Company in November or December 1934.

Defendants are unable to give the dates of purchase specifically because there is nothing to distinguish between different batches of connectors purchased from same company.

ELECTRICAL FITTINGS CORPORATION,

By (S) SAMUEL JOELSON,

Its President. 452

City of New York }
State of New York } ss.:

On this 8th day of Feb. 1936, before me personally appeared SAMUEL JOELSON of ELECTRICAL FITTINGS CORPORATION, known to me and who signed the foregoing Further Answer to Interrogatories in my presence and swore that the answers were true to the best of his knowledge and belief.

(S) EDWIN A. DENZEL,

Notary Public.

(Seal)

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Plaintiffs' Exhibit No. 6.

UNITED STATES DISTRICT COURT,

SOUTHERN DISTRICT OF NEW YORK.

THE THOMAS & BETTS Co., a corporation,
and NATIONAL ELECTRIC PRODUCTS COR-
PORATION, a corporation,

Plaintiffs,

vs.

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ELECTRICAL FITTINGS CORPORATION, a cor-
poration, JOSELYN SALES CORPORATION,
a corporation, and SAMUEL JOSELYN
and BELLE JOSELYN, individuals,

Defendants.

Equity No.

81-229.

U. S. Letters

Patent

Fullman

1,769,947.

MOTION FOR BILL OF PARTICULARS.

456

Now come the plaintiffs in the above entitled cause and move that the Court, pursuant to the provisions of Equity Rule 20, order the defendants to furnish further and better particulars of the matters stated in paragraph 8 of their answer, concerning defendants' alleged "separate and complete defense" to the bill of complaint, in the following respects:

1. It is alleged in paragraph 8 of defendants' answer, "that the connectors sold by them, the sale of which is charged to constitute an infringement of the said Fullman patent in suit, were all acquired from licensees of plaintiffs, jointly or severally, under the said patent in suit, to wit:

Appleton Electric Company of Chicago, Illinois.
 Steel City Electric Company of Pittsburgh, Pa.
 Conduit Fittings Corporation of Chicago, Ill.
 Sterling Manufacturing Company of Connecticut."

and in an affidavit by Samuel Joselson, defendant, verified February 1, 1936, and filed in reply to interrogatories heretofore propounded by plaintiffs, it is alleged that

"Cable connectors similar to plaintiffs' Exhibits A or B (1 or 2) were purchased by the Joselson Sales Corporation from the companies named below in the months shown. 458

Sterling Manufacturing Company	October	1933	
	November	1933	
	December	1933	
	January	1934	
	February	1934	
	March	1934	
	May	1934	
	June	1934	
	July	1934"	459

in view of which plaintiffs desire defendants to furnish further and better particulars by stating whether the connectors, which defendants allege were

"sold by them, the sale of which is charged to constitute an infringement of the said Fullman patent in suit,"

referred to in paragraph 8 of defendants' answer, include those which defendants admit purchasing from Sterling Manufacturing during the months of October, November

460

Plaintiffs' Exhibit No. 6.

and December, 1933, and January, February, March, May, June and July, 1934, aforesaid.

2. Please state which of the eighteen (18) patents plead in the answer as anticipations of the patent in suit, defendants will, at final hearing, rely upon, as such.

MEMORANDUM.

461

At the argument of plaintiffs' motion for leave to file interrogatories, which motion was granted on January 13, 1936, by Judge Caffey, counsel for plaintiffs stated that if defendants were able to make good their "separate and complete defense" as set forth in paragraph 8 of their answer that plaintiffs would join in an application for an order dismissing the suit.

462

Unless it transpires from the further particulars now sought from defendants that the Joselson Sales Corporation has sold some of the cable connectors purchased from Sterling Manufacturing Company between October, 1933, and July, 1934, both inclusive, or plaintiffs are able to adduce at final hearing other evidence of infringement, then plaintiffs will, for lack of evidence of infringement, join with defendants in an order dismissing the bill.

BOHLEBER & LEDBETTER,
Attorneys for Plaintiffs.

New York, N. Y., March 23, 1936.

Plaintiffs' Exhibit No. 7.

UNITED STATES DISTRICT COURT,

SOUTHERN DISTRICT OF NEW YORK.

THE THOMAS & BETTS Co., a corporation,
and NATIONAL ELECTRIC PRODUCTS COR-
PORATION, a corporation,

Plaintiffs,

vs.

ELECTRICAL FITTINGS CORPORATION, a cor-
poration, JOSELSON SALES CORPORATION,
a corporation, and SAMUEL JOSELSON
and BELLE JOSELSON, individuals,

Defendants.

Equity
#81/229.

464

DEFENDANTS' BILL OF PARTICULARS.

In answer to the interrogatories contained in plaintiffs' motion for bill of particulars, it is stated as follows, the paragraphs herein being numbered to correspond with the paragraphs in plaintiffs' motion:

465

1. The electrical connectors purchased by the Joselson Sales Corporation from the Sterling Manufacturing Company were sold by the Joselson Sales Corporation.

2. At final hearing defendants will rely upon all of the patents listed in the answer to show the state of the prior art and as anticipations of the patent in suit.

As at present advised, defendants will particularly stress the following patents in view of patent No. 1,687,-

466

Plaintiffs' Exhibit No. 7.

013, issued to Frederickson October 9, 1928, referred to in the patent in suit:

Goehst, et al	681,416
Gilbert	949,628
Davis	1,130,483
Appleton	1,192,150
Roux	1,235,926
Webster	1,245,077
Janofsky	1,246,102
Casper	1,279,256
Perry	1,585,688
Selah	1,597,486

467

DARBY & DARBY,
Attorneys for Defendant

Dated: April 21, 1936.

468

PLAINTIFF'S EXHIBIT No. 8

July 8, 1930.

J. M. G. FULLMAN

1,700,947

CONNECTER FOR ELECTRICAL CONDUITS

Filed July 26, 1928

Fig. I.

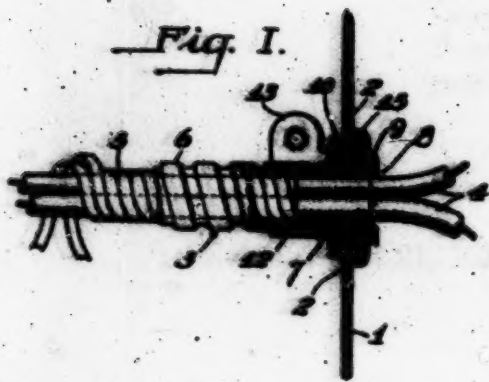


Fig. II.



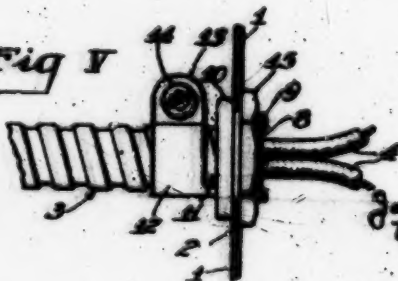
Fig. III.



Fig. IV.



Fig. V



WITNESS

W. H. H. H.

INVENTOR

James M. G. Fullman
 by Christie & Christie
 Attys.

Patented July 8, 1930

UNITED STATES PATENT OFFICE

JAMES M. G. FULLMAN, OF NEWICKLEY, PENNSYLVANIA, ASSIGNOR TO NATIONAL MENTAL HOLDING COMPANY, OF PITTSBURGH, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA

CONNECTOR FOR ELECTRICAL CONDUITS

Application filed July 22, 1928. Serial No. 288,880.

In connecting electrical conduits and armored cables to outlet boxes and other electrical fittings it is usual to cut away the conduit wall or the sheath of the cable and to pass the unsheathed conductors into the box for making the desired electrical connections. In the use of metallic conduits, and particularly in the case of so-called flexible metallic armored cable, this leaves a more or less ragged metallic edge which often abrades or cuts into the insulation on the exposed conductors, and is likely to cause short circuits and other injurious effects. In order to shield the exposed conductors from the edge of the cut-away metallic armor it has been proposed recently to provide a bushing of insulating material which can be slipped over the exposed conductors where the armor is cut away, and having a shoulder bearing against the sharp metallic edge of the armor, as shown and described in Letters Patent No. 1,887,013, dated October 9th, 1928. When such a bushing is used at the joint between an armored cable and an outlet box with connectors of the present usual types, it is largely or altogether hidden within the connector, so that its presence is not apparent to an inspector or other observer. The present invention provides an improved connector binding the cable to the outlet box, and having means for holding the insulating and protective bushing in place, which will permit the bushing to be visible, and thus permit ready inspection of the system.

In the accompanying drawings Figure 1 is a sectional elevation of an armored cable provided with an insulating bushing in its throat and joined to an outlet box by my improved connector. Figure 2 is a front elevation of the structure shown in Figure 1. Figure 3 is a view of the bushing in elevation, and Figure 4 is a front view thereof. Figure 5 is a view of the cable and connector in elevation, as shown in Figure 1.

The wall of the outlet box is designated by the numeral 1, and the usual outlet opening by the numeral 2. The flexible armored cable 3 herein shown is of the well known type. The conductors 4 have wound upon them a jacket 5 of helically coiled strips of fibrous material, such as paper, and the metallic armor 6 is coiled tightly around the jacketed conductors. When the edge of the armor 6 has been cut away, the jacket 5 is unwound for a suitable distance and broken off, thus leaving an annular space around the conductors within the armored cable back of the cut-away edge. Into this space there is slipped around the conductors the split tubular bushing 7 formed of insulating material and having at its outer edge the integral shoulder 8 which bears against the cut-away edge of the armor, leaving the exposed conductors 4 projecting therefrom. The connector may be of a variety of suitable forms, but for purposes of illustration I have shown herein the usual pinch connector having a forward cylindrical threaded portion 9 projecting through the opening in the outlet box, with the shoulder 10 bearing against the outer face of the wall of the box, the transverse slit 11, and the rearwardly projecting bifurcated barrel portion 12 having the opposite ears 13 connected by the binding screw 14, by means of which the bifurcated barrel portion is caused to pinch the armored cable tightly. The connector is held in place in the opening by means of the lock nut 15 screwed upon the threaded inner portion 9 and bearing against the inner face of the wall of the box.

In order to retain the bushing in place in such a way that it will be visible to an observer, the connector is provided at the inner edge of the portion 9 with a plurality of inwardly projecting fingers which overhang and bear upon the outer face of the shoulder 8 of the bushing, preventing its displacement, while at the same time the bushing between the fingers is readily visible to an inspector or other observer. In fact, as shown in Figures 1 and 5, the shoulder of the bushing projects slightly beyond the side edge of the lock nut 15, so that it can be seen from the side as well as from the front. This is of considerable practical advantage in the installation, and inspection of electrical conduit systems of this type.

It will be understood that the specific form of the connector may be varied, and it

will also be understood that while the invention is of particular advantage in the use of flexible and collapsible cables, it may be used to advantage in the installation of electrical conduits of other forms.

I claim as my invention:

1. The combination with an armored cable, of a backing of insulating material having a tubular barrel portion contained within the cable armor and a shoulder bearing against the end of the armor, and a connector and means for securing it to the cable, said connector having a portion projecting beyond the end of the cable armor and having inwardly projecting flanges adapted to bear upon the backing shoulder and retain the backing in place.

2. The combination with an electrical conduit, of a backing having a tubular barrel portion contained within the conduit and a shoulder bearing against the end of the conduit, and a connector and means for securing it to the conduit, said connector having means for retaining the backing in place while leaving it visible to ocular inspection.

In testimony whereof I have hereunto set my hand.

JAMES M. G. FULLMAN.

The Thomas & Betts Co.

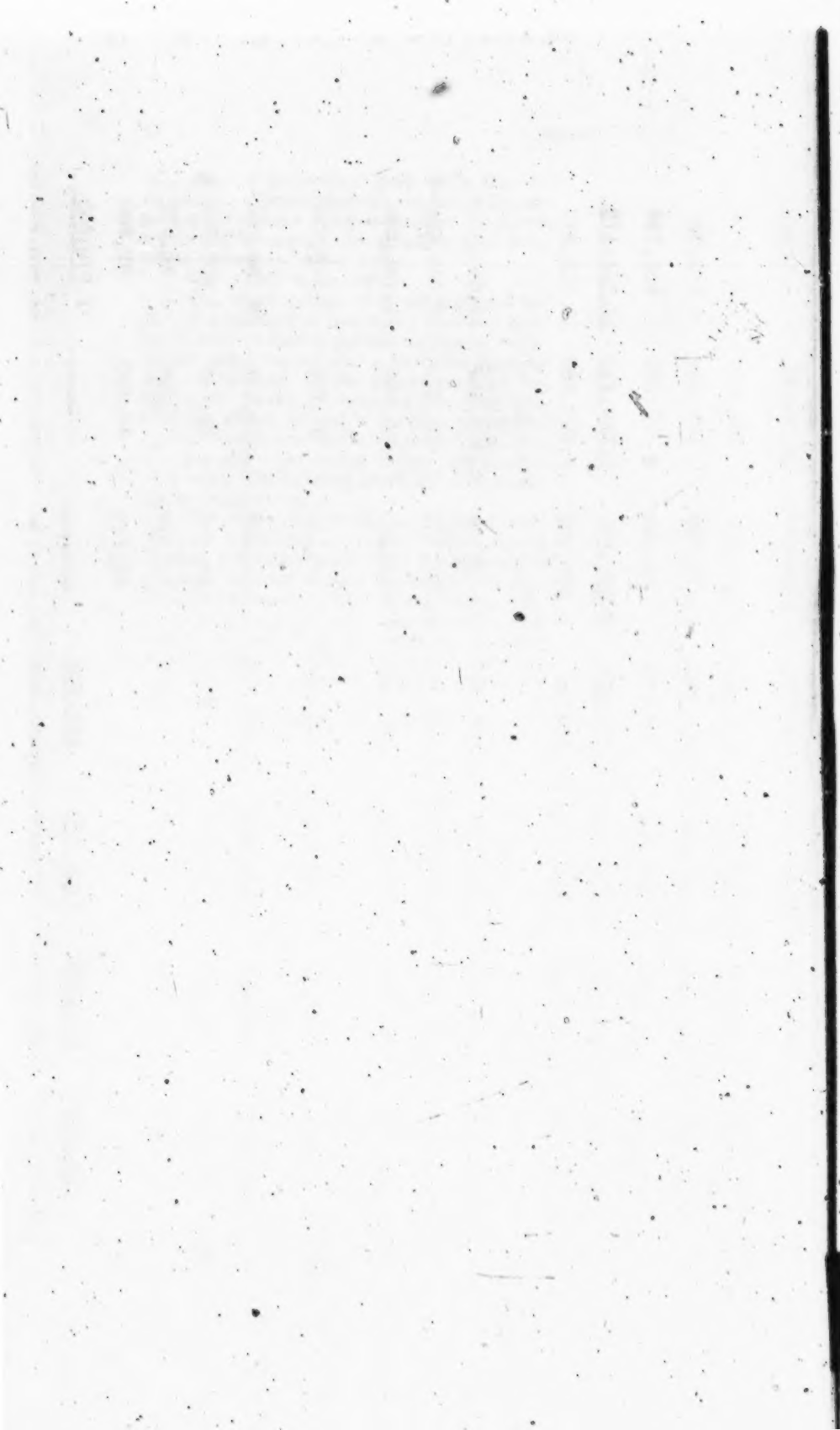
Set Screw	364,570	840,875	293,100	483,060	637,045	258,626	2,857,276
Squeeze	406,451	980,175	300,295	1,059,773	1,673,705	573,398	5,458,787
Slip-In	108,652	129,450	102,925	103,610	135,949	87,550	666,126
Tite-Bite	<u>1,224,450</u>	<u>1,023,127</u>	<u>1,476,444</u>	<u>1,822,408</u>	<u>2,306,026</u>	<u>1,743,725</u>	<u>10,596,178</u>
	2,102,123	2,973,827	2,672,764	3,448,849	5,752,725	2,663,289	19,613,377
<u>Licenses</u>							
Set Screw	1,653,169	3,538,763	2,282,500	2,475,891	3,312,186	<u>8/31/37</u> 1,428,609	15,681,116*
Squeeze	1,290,139	3,431,603	1,953,309	3,593,178	3,737,711	1,622,490	15,766,928**
Loxall and similar types	328,780	292,098	364,585	343,530	330,581	122,000	1,781,554
Comb. Loxall and similar types	52,838	38,224	109,012	188,820	95,190	36,999	519,863
Universal and similar types	366,721	538,406	1,105,821	1,639,478	3,216,393	1,623,275	9,489,084
Hinge and similar types	11,700	10,950	49,500	118,200	138,950	69,545	407,845
Set Fast	17,000	4,500	2,500	3,000	1,475	1,200	30,675
Non-Metallic						46,600	82,300
Miscellaneous	<u>293,600</u>	<u>829,275</u>	<u>509,900</u>	<u>142,420</u>			<u>1,575,595</u>
	4,013,747	8,892,819	6,178,107	8,503,815	10,569,186	4,949,719	44,353,982 1/2

*Includes also 990,000 sold 11/4/33 to 12/31/34 (S.S.)

**, " " 157,500 " ditto (SQ.)

Grand Total

55,967,269



PLAINTIFF'S EXHIBIT No. 31

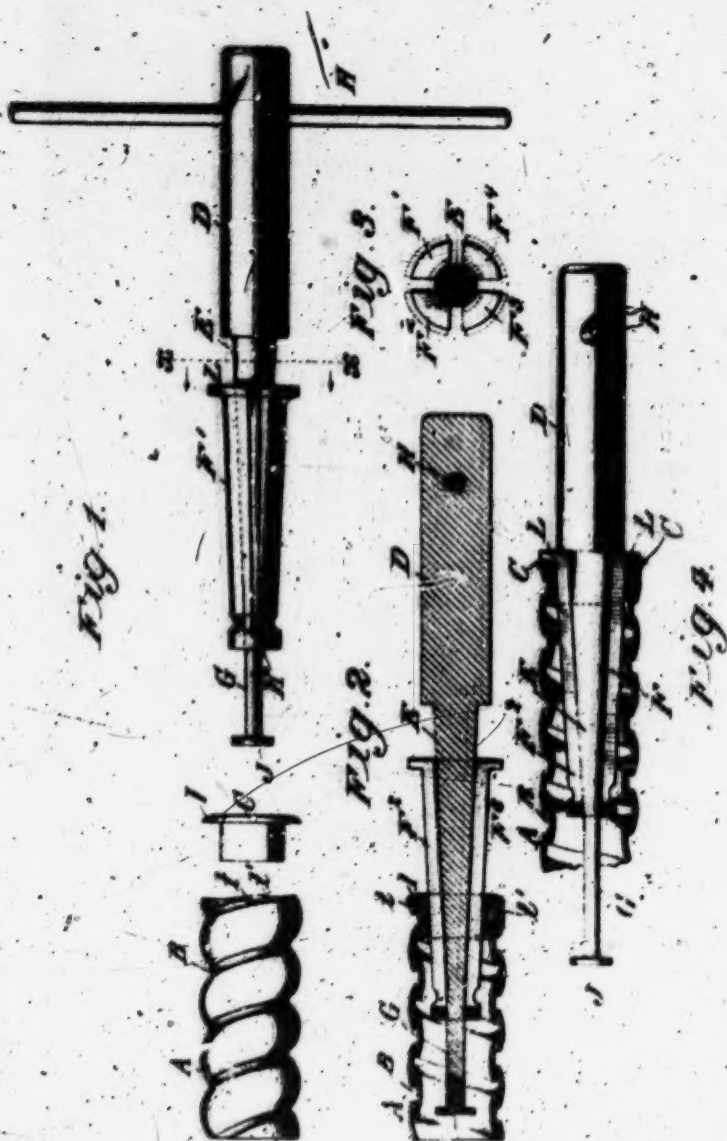
No. 840,758.

Patented Jan. 9, 1900.

E. T. GREENFIELD.
FLEXIBLE METALLIC CONDUIT.

(Application filed July 17, 1899.)

(No Model.)



Witnesses

E. T. Greenfield
H. F. Keating

Inventor

E. T. Greenfield
By ^{his} Attorney
Charles G. Kintner

UNITED STATES PATENT OFFICE.

EDWIN T. GREENFIELD, OF NEW YORK, N. Y.

FLEXIBLE METALLIC CONDUIT.

SPECIFICATION forming part of Letters Patent No. 840,788, dated January 9, 1900.

Application filed July 17, 1900. Serial No. 734,000. (No model.)

To all whom it may concern:

Be it known that I, EDWIN T. GREENFIELD, a citizen of the United States, residing at New York, in the borough of Manhattan, county of New York, and State of New York, have made a new and useful improvement in Flexible Metallic Conduits, of which the following is a specification:

My improvement has for its object to provide means for giving to the ends of flexible and other metallic conduits, like those disclosed in a prior patent granted to me on the 8th day of August, 1899, and numbered 630,501, smooth or finished ends.

In the before-mentioned patent I have described and shown a flexible metallic tube composed of two interlocking strips of metal spirally wound the one about the other. In using such conduits it is found that where the ends are sawed off there is always left a jagged surface, which endangers the insulation of wires being drawn into the inner surface thereof, and it was with a view of overcoming this objectionable feature that the present improvement was devised.

My improvement will be understood by referring to the accompanying drawings, in which—

Figure 1 illustrates in side elevational view a short section of flexible metallic conduit like that disclosed in the before-mentioned patent and also like that disclosed in prior patents granted to me, the same being composed of interlocking strips of metal. Said figure also illustrates the improved bushing-ring for overcoming the evil effects of the jagged ends of said conduit and the tool for putting the same in place. Fig. 2 is a longitudinal sectional view taken through the body of Fig. 1, illustrating the manner of using the tool, the bushing-ring being in place within the end of the conduit. Fig. 3 is a transverse sectional view taken through Fig. 1 on the line *x x* and as seen looking thereat in the direction of the arrows from the right toward the left hand end of the drawings. Fig. 4 is a longitudinal sectional view illustrating the completion of the use of the tool in inserting the bushing-ring within the end of the conduit, the tool being shown partly in sectional and partly in side elevational view.

Referring now to the drawings and first to Fig. 1, A and B represent the interlocking metallic strips which constitute or compose when wound together my novel form of conduit. It is found in actual use of the before-mentioned conduit that when the same is sawed off there always result ragged edges or jagged ends *e e*, which by reason of their sharp edges necessarily endanger the insulation of wires being drawn into the inner surface of the conduit. My present improvement is designed to overcome this objectionable feature, and to this end I form an expandable metallic bushing-ring C, preferably of lead and having a flange I, adapted to overlap or conceal the ends *e e* and the ragged sawed edges when put into position in the inner end of the conduit. For the purpose of putting this ring in position I have devised a tool consisting of a body part D, having a handle H, said body part being cone-shaped at E for a definite part of its length and adapted to be inserted through an expander, consisting of four expandable parts *F F F F*, constructed by slitting a tube with parallel slots K to a point near one end thereof, the other end thereof having shoulders L, adapted to come into mechanical bearing with the corresponding body part D when thrust firmly home.

J is a detachable head for holding the parts together.

The result sought by my novel means and with the novel tool hereinbefore described I effect as follows: The expandable bushing-ring C is put into position in the end of the conduit and the tool is inserted with the expander at its extreme left-hand position. It is then forced inward by hitting the outer end of the body part D successive blows with a hammer. Thus the cone-shaped part E causes the expander *F F F F* to expand the cylindrical body part of the bushing-ring outward against the inner surface of the flexible metallic conduit, thereby causing the same to be firmly secured. Finally when the shoulder L comes into mechanical contact with the flange I of the bushing-ring and the shoulder of the body part D into like mechanical contact with the shoulder L, the operator takes hold of the handle H and rotates the entire tool until the bushing-ring is firmly and se-

ly locked in position in and against the
of the conduit, thus making a completed
both end which will not offer any obstruc-
to insulated wires when being put in
se.
do not limit my improvement to the es-
sential means herein shown and described for
effecting the result sought, as I believe I am
readily entitled to claim means in the nature
of an expandible bushing-ring for protecting
covering the jagged edges at the end of a
flexible metallic conduit and when combined
herewith; nor do I limit myself to the use
of the improved means for protecting or cov-
ering the jagged ends of a metallic conduit
in connection with a flexible conduit, as it is
clear that the same means might be used
in connection with ordinary iron or steel tu-
bular conduits, and my claims are designed to
cover each scope as to include all such cases.
I make no claim in the present application
for the tool herein shown and described for
forming a protecting bushing in the end of a
metallic conduit, as the same constitutes the
subject-matter of a separate or divisional ap-
plication bearing Serial No. 732,961, filed by
me in the United States Patent Office on the
1st day of August, 1899.
Having thus described my invention, what

I claim, and desire to secure by Letters Pat- 30
ent of the United States, is—

1. A metallic conduit having jagged ends,
in combination with a bushing-ring secured
to the inner surface and end thereof, sub-
stantially as described. 35

2. A metallic conduit having jagged ends,
in combination with a bushing-ring secured
to the inner surface thereof, said ring being
provided with a flange which covers the end
of the conduit, substantially as described. 40

3. A metallic conduit provided with a bush-
ing-ring, said ring being secured against the
inner surface of the conduit and provided
with a flange which rests against the end
thereof, substantially as described. 45

4. A flexible conduit composed of inter-
locking metallic strips provided with bush-
ing-rings at its opposite ends, said rings be-
ing secured against the inner surface of the
conduit and having flanges which rest against 50
the ends thereof, substantially as described.

In testimony whereof I have hereunto sub-
scribed my name this 5th day of July, 1899.

EDWIN T. GREENFIELD.

Witnesses:

C. J. KIRKMAN,
M. F. KRATING.

THIS

nat

Wumb

PLAINTIFF'S EXHIBIT No. 32

200

164

DEPARTMENT OF COMMERCE

UNITED STATES PATENT OFFICE

To all persons to whom these presents shall come, Greeting:

IS TO CERTIFY that the annexed is a true copy from the records
of this office of the File Wrapper and Contents, in the
ter of the

Letters Patent of

James M. G. Fullman, assignor to
National Metal Molding Company,

er 1,769,947,

Granted July 8, 1930,

for

Improvement in Connector for Electrical Conduits.

Plaintiffs' Exhibit 32,
Certified copy of file wrapper
and contents of Fullman Patent
substituted for abstract
offered at Record, Page 188.

IN TESTIMONY WHEREOF I have hereunto set my

hand and caused the seal of the Patent Office to be

affixed, at the City of Washington, this twenty-seventh

HIS IS TO CERTIFY that the annexed is a true copy from the records
of this office of the File Wrapper and Contents, in the
matter of the

Letters Patent of

James M. G. Fullman, assignor to
National Metal Molding Company,

umber 1,769,947,

Granted July 8, 1930,

for

Improvement in Connector for Electrical Conduits.

Plaintiffs' Exhibit 32,
Certified copy of file wrapper
and contents of Fullman Patent
substituted for abstract
offered at Record, Page 182.

IN TESTIMONY WHEREOF I have hereunto set my
hand and caused the seal of the Patent Office to be
affixed, at the City of Washington, this **twenty-seventh**
day of **December**, in the year of our Lord one
thousand nine hundred and thirty-seven and of the
Independence of the United States of America the
one hundred and sixty-second.

TEST:


St. Edwards
Chief of Division

Commy P. Cor
Commissioner of Patents.

165

NUMBER (Series of 1928)

PATENT No 176994

1928

DATE

DIV. 60

EXR'S BOOK 247-72

13

Name

JAMES M. G. FULLMAN

Asst. National Metal Folding Corp.
Pittsburgh, Pennsylvania, a corp.
Pennsylvania.

of

SEWICKLEY

State of

PENNSYLVANIA

Invention

CONNECTOR FOR ELECTRICAL CONDUITS

ORIGINAL

RENEWED

APPLICATION FILED COMPLETE

JULY 26, 1928

PARTS OF APPLICATION FILED

Petition, Specification,

Oath, First Fee (\$20),

1 sheets Drawings,

JULY 26, 1928

Division of App. No.

Examined and passed for Issue June 2, 1928

Reexam'd and passed for Issue, 1928

Notice of Allowance JUN - 2 1930

Exr. Div., 1928

Final Fee \$25 June 6, 1930

Notice of Allowance By Commissioner, 1928

Attorney

Final Fee, 1928

Associate Attorney

CHRISTY & CHRISTY P O BOX 950 PITTSBURGH PA

of Claims Allowed 2 Print Claims

in O. G. Class 247-25

Title Allowed Connector for Electrical Conduits

32/2

166
#20-
CL

To the Commissioner of Patents:

295550

Your Petitioner

James M. G. Fullman,

272

residing at Sewickley, in the County of Allegheny,
and State of Pennsylvania, a citizen of the United States,
whose Post Office Address is Care of National Metal Holding Company,
Ambridge, Pennsylvania,

respectfully prays that Letters Patent of the United States may be granted to him
for the improvements in Connector for Electrical Conduits,

set forth in the annexed specification.

He hereby appoints the firm of **CHRISTY & CHRISTY**, the members of which
firm are Marshall A. Christy and Bayard H. Christy, and whose address is Post Office
Box No. 850, Pittsburgh, Pennsylvania, his Attorneys; with full power of
substitution and revocation, to prosecute this application, to alter and amend the specification,
to appeal or withdraw in case of rejection, to receive the Patent when granted, and to
transact all business in the Patent Office relative thereto.

James M. G. Fullman

Specification.

To whom it may Concern:

Be it known that I, James M. G. Fullman,

residing at Sewickley, in the County of Allegheny,
and State of Pennsylvania, a citizen of the United States have
invented or discovered certain new and useful improvements in

Electrical Conduits

Div. **JAMES H. G. FULLMAN**
Name **Carroll National Metal Molding Company,**
Pittsburgh, Pennsylvania, a corp. of
Pennsylvania

of **SEWICKLEY**
State of **PENNSYLVANIA**
Invention **CONNECTOR FOR ELECTRICAL CONDUITS**

ORIGINAL **RENEWED**

APPLICATION FILED COMPLETE JULY 26, 1933

Petition, Specification,
Oath, First Fee (\$30), **JULY 26, 1933**
1 sheets Drawings,

78

Examined and passed for Issue **June 2, 1934**

Reexam'd and passed for Issue _____, 193

Err. Div. 2
JUN - 2 1930

Err. Div. _____

Notice of Allowance _____, 193

Notice of Allowance _____, 193

Final Fee **\$25 June 6, 1934**

Final Fee _____, 193

Attorney **CHRISTY & CHRISTY P O BOX 950 PITTSBURGH PA**

Associate Attorney _____

of Claims Allowed **2** Print Claims **1** in O. G. Class **227-25**
Claims Allowed **Connectors for Electrical Conduits**
3214

residing at Sewickley, in the County of Allegheny,
 and State of Pennsylvania, a citizen of the United States,
 whose Post Office Address is Care of National Metal Holding Company,
 Ambridge, Pennsylvania,

respectfully prays that Letters Patent of the United States may be granted to him
 for the improvements in Connector for Electrical Conduits,

set forth in the annexed specification.

He hereby appoints the firm of CHRISTY & CHRISTY, the members of which
 firm are Marshall A. Christy and Bayard H. Christy, and whose address is Post Office
 Box No. 950, Pittsburgh, Pennsylvania, his Attorneys, with full power of
 substitution and revocation, to prosecute this application, to alter and amend the specification,
 to appeal or withdraw in case of rejection, to receive the Patent when granted, and to
 transact all business in the Patent Office relative thereto.

James M. G. Fullman

Specification.

To whom it may Concern:

Be it known that I, James M. G. Fullman,

residing at Sewickley, in the County of Allegheny,
 and State of Pennsylvania, a citizen of the United States have
 invented or discovered certain new and useful improvements in
 Connector for Electrical Conduits,

of which improvement the following is a specification.

C In connecting electrical conduits and armored cables to outlet boxes and other electrical fittings it is usual to cut away the conduit wall or the sheath of the cable and to pass the un-sheathed conductors into the box for making the desired electrical connections. In the use of metallic conduits, and particularly in the case of so-called flexible metallic armored cable, this leaves a more or less ragged metallic edge which often abrades or cuts into the insulation on the exposed conductors, and is likely to cause short circuits and other injurious effects. In order to shield the exposed conductors from the edge of the cut-away metallic armor it has been proposed recently to provide a bushing of insulating material which can be slipped over the exposed conductors where the armor is cut away, and having a shoulder bearing against the sharp metallic edge of the armor. When such a bushing is used at the joint between an armored cable and an outlet box with connectors of the present usual types, it is largely or altogether hidden within the connector, so that its presence is not apparent to an inspector or other observer. The present invention provides an improved connector binding the cable to the outlet box and having means for holding the insulating and protective bushing in place, which will permit the bushing to be visible, and thus permit ready inspection of the system.

In the accompanying drawings Figure 1 is a sectional elevation of an armored cable provided with an insulating bushing in its throat and joined to an outlet box by my improved connector. Figure 2 is a front elevation of the structure shown in Figure 1. Figure 3 is a view of the bushing in elevation, and Figure 4 is a front view thereof. Figure 5 is a view of the cable and connector in elevation, as shown in Figure 1.

The wall of the outlet box is designated by the numeral 1, and the usual outlet opening by the numeral 2. The flexible armored cable 3 herein shown is of the well known type. The conductors 4 have wound upon them a jacket 5 of helically coiled strips of fibrous material, such as paper, and the metallic armor 6 is coiled tightly around the jacketed conductors. When the edge of the armor 6 has been cut away, the jacket 5 is unwound for a suitable distance and broken off, thus leaving an annular space around the conductors within the armored cable back of the cut-away edge. Into this space there is slipped around the conductors the split tubular bushing 7 formed of insulating material and having at its outer edge the integral shoulder 8 which bears against the cut-away edge of the armor, leaving the exposed conductors 4 projecting therefrom. The connector may be of a variety of suitable forms, but for purposes of illustration I have shown herein the usual pinch connector having a forward cylindrical threaded portion 9 projecting through the opening in the outlet box, with the shoulder 10 bearing against the outer face of the wall of the box, the transverse slit 11, and the rearwardly projecting bifurcated barrel portion 12 having the opposite ears 13 connected by the binding screw 14, by means of which the bifurcated barrel portion is caused to pinch the armored cable tightly. The connector is held in place in the opening by means of the lock nut 15 screwed upon the threaded inner portion 9 and bearing against the inner face of the wall of the box.

In order to retain the bushing in place in such a way that it will be visible to an observer, the connector is provided at the inner edge of the portion 9 with a plurality of inwardly projecting fingers which overhang and bear upon the outer face of the shoulder 5 of the bushing, preventing its displacement, while at the same time the bushing between the fingers is readily visible to an inspector or other observer. In fact, as shown in Figures 1 and 2, the shoulder of the bushing projects slightly beyond the side edge of the lock nut 15, so that it can be seen from the side as well as from the front. This is of considerable practical advantage in the installation and inspection of electrical conduit systems of this type.

It will be understood that the specific form of the connector may be varied, and it will also be understood that while the invention is of particular advantage in the use of flexible metallic armored cables, it may be used to advantage in the installation of electrical conduits of other forms.

I CLAIM AS MY INVENTION:

1. The combination with an armored cable, of a bushing of insulating material having a tubular barrel portion contained within the cable armor and a shoulder bearing against the end of the armor, and a connector and means for securing it to the cable, said connector having a portion projecting beyond the end of the cable armor and having inwardly projecting fingers adapted to bear upon the bushing shoulder and retain the bushing in place.

2. The combination with an electrical conduit, of a bushing having a tubular barrel portion contained within the conduit and a shoulder bearing against the end of the conduit, and a connector and means for securing it to the conduit, said connector having means for retaining the bushing in place while leaving it visible to ocular inspection.



32/7

I do hereby certify that I have herewith set my hand.

WITNESSES:

John McEwen
August W. C. C. C.

James M. G. Fullman

State of Pennsylvania

County of Allegheny

James M. G. Fullman,

the above named petitioner, being duly sworn, deposes and says that he is a
citizen of the United States and resident of Sewickley;

in the County of Allegheny, and State of Pennsylvania,
and that he verily believes himself
to be the original, first and sole inventor of the improvement in
Connector for Electrical Conduits,

described and claimed in the annexed specification, and that he does not
know and does not believe that the same were ever known or used before
his invention or discovery thereof, or patented or described in any printed
publication in any country before his invention or discovery thereof or more
than two years prior to this application, or in public use or on sale in the United States
for more than two years prior to this application, and that no application for letters patent
on said improvements has been filed by him or by
his representatives or assigns, in any foreign country.

Sworn and Subscribed
before me this 16th day
of Feb - 1928

James M. G. Fullman

John M. G. Fullman

747
75 Nov

947
Jul. 8

Fig. I.

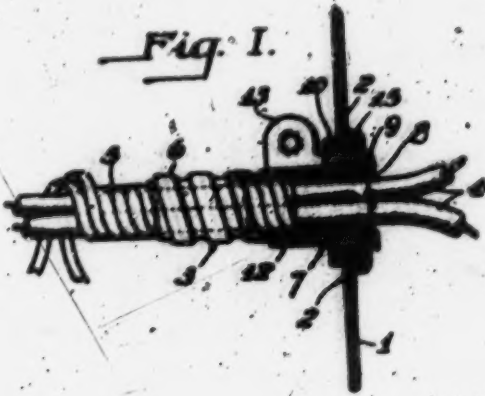


Fig. II.



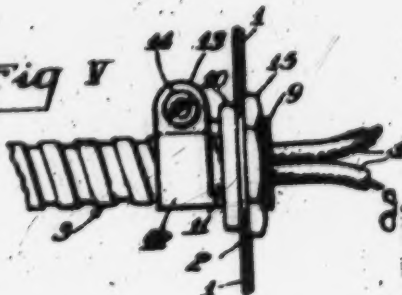
Fig. III.



Fig. IV.



Fig. V.



WITNESSES
[Signature]

INVENTOR

Jamieson H. S. Tallman
By Christie & Christie
Attys.

W. H. Caldwell
State of Pennsylvania

County of ~~Allegheny~~ *Beaver*

James M. G. Fullman,

the above named petitioner, being duly sworn, deposes and says that he is a
citizen of the United States and resident of Sewickley,

in the County of Allegheny, and State of Pennsylvania,
and that he verily believes himself
to be the original, first and sole inventor of the improvement in
Connector for Electrical Conduits,

described and claimed in the annexed specification, and that he does not
know and does not believe that the same were ever known or used before
his invention or discovery thereof, or patented or described in any printed
publication in any country before his invention or discovery thereof or more
than two years prior to this application, or in public use or on sale in the United States
for more than two years prior to this application, and that no application for letters patent
on said improvements has been filed by him or by
his representatives or assigns, in any foreign country.

Sworn and Subscribed

before me this 16th day

of July - 1928

John T. Carruth
Notary Public.

MY COMMISSION EXPIRES
MARCH, 1931

32/8

July 8

Fig. I.

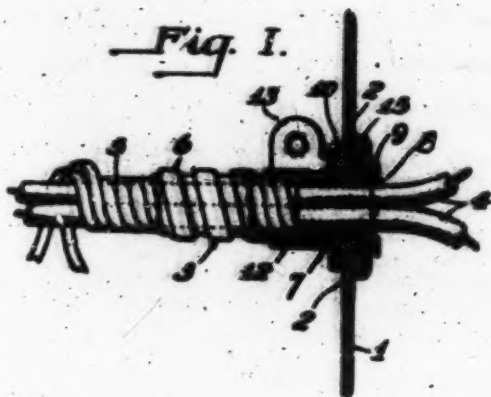


Fig. II.



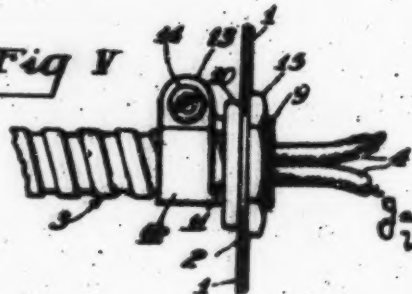
Fig. III.



Fig. IV.



Fig. V.



WITNESSES
Attest

INVENTOR

James H. S. Tullman
By Christy & Christy,
Attys.

60-

247-125 ^{32/4} 7

173

Div.

60

Exam 213 Index

30

Page No.

2

Address only
The Commissioner of Patents,
Washington, D. C.
and not any official by name

DEPARTMENT OF COMMERCE
UNITED STATES PATENT OFFICE
WASHINGTON

All communications respecting this
application should give the serial number,
date of filing, and name of
the applicant

EJS-FR

Please find below a communication from the EXAMINER in
charge of this application.

April 13, 1929.

Thomas E. Robertson
Commissioner of Patents.

Applicant: James M.G. Fullman

Christ & Christy,
P. O. Box 950,
Pittsburgh, Pa.

Ser. No. 295,550
Filed July 26, 1920
For Connector for Electrical
Conduits

This case has been examined.

MAILED
APR 13 1929

References made of record:-

Freeman	840,619	Apr. 2, 1907	247-25 I
Charters et al	911,293	Feb. 2, 1908	247-25
Gilbert	949,625	Feb. 15, 1910	247-43
Appleton	1,192,150	July 25, 1916	247-43
Casper	1,279,256	Sept. 17, 1918	247-43
Thomas	1,475,524	Nov. 27, 1923	247-25
Perry	1,505,600	May 25, 1926	247-25

Claim 1 is rejected on Casper in view of Thomas.

There is no invention in making the bushing shown by Casper
of tubular form as disclosed by Thomas.

Claim 2 is rejected as above. This claim is further
rejected on either Freeman, Charters et al, Gilbert or Appleton
wherein the bushing also serves as an element of the connector.

In the specification, page 4, lines 7 to 10, appears
the statement that the bushing can be seen from the side as
shown in Fig. 1. This statement is true only because the figure
shows the device in cross-section. However, Figure 5 discloses
the fact that the bushing can not be seen from the side.

R. L. Jones
Examiner.

11/10

IN THE UNITED STATES PATENT OFFICE.

1743
PAPER NO. 3
AMENDMENT
AMENDMENT
PAPER NO.

AUG 26 29

In the matter of the application of

James M. G. Pullman,

278

Improvement in

Connector for Electrical Conduits.

Filed July 26, 1928

Serial No. 295,550

BEFORE THE EXAMINER, DIVISION 60,

899th Bldg. 213 Annex.

Pittsburgh, Pa. August 24, 1929.

Hon. Commissioner of Patents.

Sir:

In response to Official Action dated April 13th, 1929, please amend this application as follows:

Page 2, line 14, change the period to a comma and insert as shown and described in Letters Patent No. 1,687,013, dated October 9th, 1928.


Page 4, lines 7 and 8, change "Figure 1" to "Figures 1 and 5".

Reconsideration of this application is requested.

The insertion of a reference to the Frederickson Patent No. 1,687,013 will suffice for the discussion of this case, since it is more pertinent than is the Thomas Patent referred to by the Examiner. The tubular barrel portion of the bushing of Thomas is not contained within the cable armor, nor does its shoulder bear against the end of the armor, whereas that is the case with the Frederickson bushing to which reference is made in the application.

It is submitted, however, that a rejection upon Casper and Frederickson (or Thomas), taken together, is not maintainable. The only purpose of the Casper construction is to hold the ring 7

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574

3

8

.

9

9



EJO-FR

WASHINGTON

April 13, 1929.

See and before a communication from the EXAMINER in
 response of this application.

Thomas E. Robertson
 Commissioner of Patents.

Applicant: James M.G. Fullman

Ser. No. 295,550
 Filed July 26, 1928
 For Connector for Electrical
 Conduits

Christy & Christy,
 P. O. Box 950,
 Pittsburgh, Pa.

This case has been examined.

References made of record:-

Freeman	840,019	Apr. 2, 1907	247-25 I
Charters et al	911,293	Feb. 3, 1909	247-25
Gilbert	949,626	Feb. 15, 1910	247-43
Appleton	1,192,150	July 25, 1916	247-43
Casper	1,279,256	Sept. 17, 1918	247-43
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Perry	1,505,600	May 25, 1926	247-25

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There is no invention in making the bushing shown by Casper
 of tubular form as disclosed by Thomas.

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 rejected on either Freeman, Charters et al, Gilbert or Appleton
 wherein the bushing also serves as an element of the connector.

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 the statement that the bushing can be seen from the side as
 shown in Fig. 1. This statement is true only because the figure
 shows the device in cross-section. However, Figure 5 discloses
 the fact that the bushing can not be seen from the side.

EJS

R. E. Jones
 Examiner.

MAILED
 APR 13 1929



PAPER NO.

278

Improvement in

In the matter of the application of

James M. G. Fullman,

Connector for Electrical Conduits.

Filed July 26, 1928

Serial No. 295,550

BEFORE THE EXAMINER, DIVISION 60,

ROOM NO. 213 Annex.

Pittsburgh, Pa. August 24, 1929.

Hon. Commissioner of Patents.

Sir:

In response to Official Action dated April 13th, 1929, please amend this application as follows:

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Page 4, lines 7 and 8, change "Figure 1" to "Figures 1 and 5".

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It is submitted, however, that a rejection upon Casper and Frederickson (or Thomas), taken together, is not maintainable. The only purpose of the Casper construction is to hold the ring 7 from falling out, and he uses claws, which may or may not be integral with his bushing 4, simply as a matter of convenience in manufacture. In providing the fingers 9 integral with the connector

James M. G. Pullman - 2.

itself, applicant has the definite purpose, and has achieved a new result, of making the insulating bushing contained within the connector visible to the electrical inspector, thus saving time and trouble. Specifically, Casper does not show even an armored cable, and of course has no insulating bushing with a tubular barrel portion contained within the cable armor, nor a shoulder bearing on the end of the armor.

On the other hand, Fredrickson does not show or describe any connector. He clearly contemplates the use of a connector, but does not show or describe any organized structure like that of applicant as defined in applicant's claims. In other words, Fredrickson left it open for other inventors to utilize his invention in connection with the securing of cables to outlet boxes, and applicant has supplied such a connection, which is of very desirable type and gives a new result.

For these reasons it is submitted that the claims are allowable.

The other patents cited by the Examiner are all believed to be more remote.

For example, Freeman simply shows a bushing, the barrel portion of which is contained within the armor of a cable or conduit, while the flange portion bears against the inner wall of the outlet box, the bushing itself acting as a connector, and hence there is no such combination as that defined by applicant.

Appleton shows and described another bushing, the flange of which rests against the inside of the outlet box with its barrel portion projecting outwardly, in this case within the connector 11, but not within the armor. The connector 11 does not enter the box at all and hence has no projecting fingers adapt-

James M. G. Pullman - 3.

ed to hold the bushing in place.

So far as this case is concerned, the device of Charters is the same as that of Appleton, and it is no nearer to applicant's combination.

The device of Gilbert is still more remote.

It is requested that the amendment to Figure 5 of the applicant's drawings be admitted. This only makes Figure 5 conform to Figures 1 and 2, and overcomes the Examiner's objection. It will be clearly seen on Figure 1 that a portion of the flange or shoulder of the bushing 8 projects beyond the edge of the nut 15, and thus this is visible from the side of the structure as well as from the end.

Very respectfully,

Cheney & Cheney
Attorneys for Applicant.

32/13

#4

IN THE UNITED STATES PATENT OFFICE



matter of the application of

James M. G. Pullman,

Improvement in Connector for Electrical Conductors

Filed July 26, 1928

Serial No. 295,550

BEFORE THE EXAMINER, DIVISION 60,

Room 22, 213 Annex.

Pittsburgh, Pa. August 24, 1928.

Hon. Commissioner of Patents,

Sr.

Handwritten: **CO. 117**, *James Bank*

Will the Patent Office draftsman kindly correct Figure 5 of the drawings of this application, changing that portion of it to the right of shoulder 10, as indicated in on the sheet of the print of the drawings enclosed herewith.

Please place in the file a print of the drawings as originally filed.

Also, please send us a print of the drawing as amended.

Charge the cost of this to the account of Christy, Christy & Wharton.

Very respectfully,

✓ *Christy & Christy*
Attorneys for Applicant

RECEIVED IN DIV. C

SEP 12 1928

Handwritten: *Charge our account for the above Christy, Christy & Wharton*

RECEIVED IN DIV. C

CORRECTION ORDERED

AUG 29 1928

SEP 10 1928

CORRECTED

60

Approved

Handwritten: *#1.00*

NOV 3 1928

Fig. I.

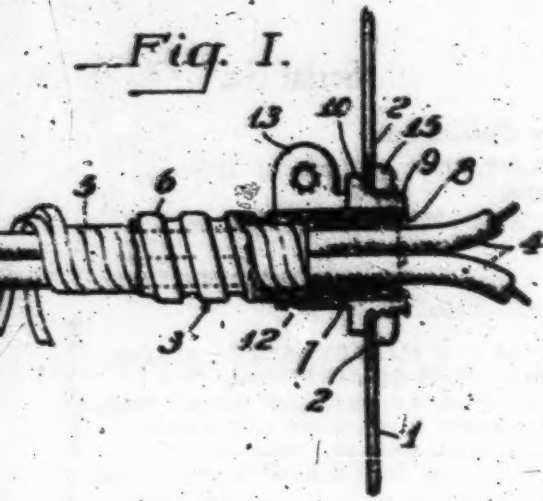


Fig. II.

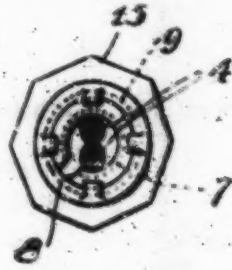


Fig. III.

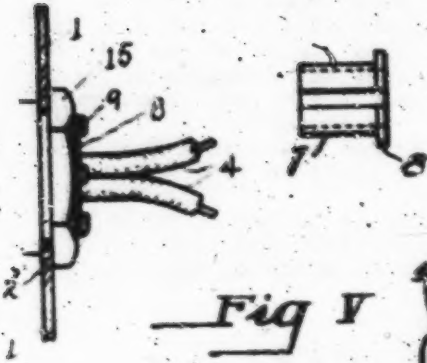
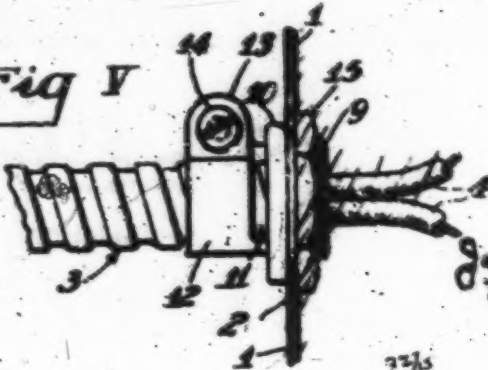


Fig. IV.



Fig. V.



WITNESSES

W. Wallace

INVENTOR

James H. S. Tullman
by Christie & Christie
Attys

72/5

Improvement in

Connector for Electrical Conductors

Filed July 26, 1928

Serial No. 295,550

BEFORE THE EXAMINER, DIVISION 60,

Room 33, 213 Annex.

Pittsburgh, Pa. August 24, 1929.

Hon. Commissioner of Patents,

Sr.

Will the Patent Office draftsman kindly correct Figure 5 of the drawings of this application, changing that portion of it to the right of shoulder 10, as indicated in red on the sheet of the print of the drawings enclosed herewith.

Please place in the file a print of the drawings as originally filed.

Also, please send us a print of the drawing as amended.

Charge the cost of this to the account of Christy, Christy & Wharton.

Very respectfully,

RECEIVED IN DIV. C

SEP 12 1929

✓ Christy & Christy
Attorneys for Applicant

Change our account for the above
Christy, Christy & Wharton

RECEIVED IN DIV. C

CORRECTION
ORDERED

AUG 29 1929

SEP 19 1929

CORRECTED

60

Approved
E. J. [unclear]

\$ 1.00

ACCOUNT

NOV 5 1929

ACCOUNT CHARGED

FINANCIAL CLEER

Sept 5, 1929

32/164

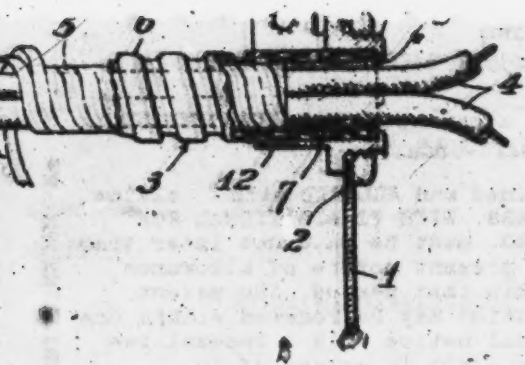


Fig. III.

Fig. IV.

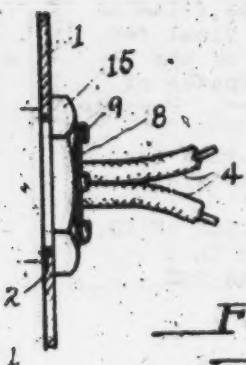
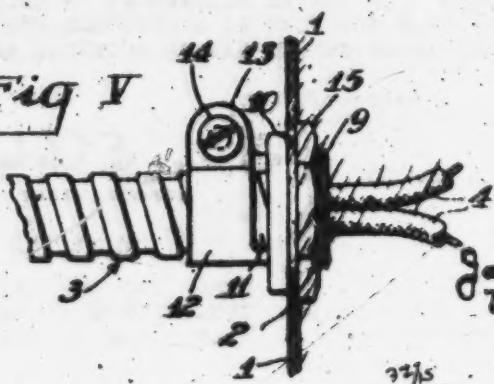


Fig. V.



WITNESSES
Wallace.

INVENTOR

James M. S. Tillman
Christy & Christy
Attys.

37/5

179
Div. 60

APPROVED ONLY
THE COMMISSIONER OF PATENTS
WASHINGTON, D. C.

Serial No. 295,550

DEPARTMENT OF COMMERCE

UNITED STATES PATENT OFFICE

WASHINGTON

June 2, 1930.

James H. G. Sullivan, assor

Your APPLICATION for a patent for an IMPROVEMENT in
Connector for Electrical Conduits

filed July 20, 1920 has been examined and ALLOWED with 2 claims.

The final fee, TWENTY DOLLARS, WITH \$1 ADDITIONAL FOR EACH CLAIM ALLOWED IN EXCESS OF 20, must be paid not later than SIX MONTHS from the date of this present notice of allowance. If the final fee be not paid within that period, the patent will be withheld, but the application may be renewed within one year after the date of the original notice with a renewal fee of \$20 and \$1 additional for each claim in excess of 20.

The office delivers patents upon the day of their date, on which date their term begins to run. The preparation of the patent for final signing and sealing will require about four weeks, and such work will not be begun until after payment of the necessary final fee.

When the final fee is paid, there should also be sent, DISTINCTLY AND PLAINLY WRITTEN, the name of the INVENTOR, TITLE OF THE INVENTION, AND SERIAL NUMBER AS ABOVE GIVEN, DATE OF ALLOWANCE (which is the date of this circular), DATE OF FILING, and, if assigned, the NAMES OF THE ASSIGNEES.

If it is desired to have the patent issue to an ASSIGNEE OR ASSIGNEES, an assignment containing a REQUEST to that effect, together with the FEE for recording the same, must be filed in this office on or before the date of payment of the final fee.

After issue of the patent, uncertified copies of the drawings and specifications may be purchased at the price of TEN CENTS EACH. The money should accompany the order. Postage stamps will not be received.

The final fee will NOT be received from other than the applicant, his assignee or attorney, or a party in interest as shown by the records of the Patent Office.

NOTICE.—WHEN THE NUMBER OF CLAIMS ALLOWED IS IN EXCESS OF 20, NO SUM LESS THAN \$20 PLUS \$1 ADDITIONAL FOR EACH CLAIM IN EXCESS OF TWENTY CAN BE ACCEPTED AS THE FINAL FEE.

Respectfully,

Thomas E. Robertson

Commissioner of Patents.

Christy & Christy,
P. O. Box 950,
Pittsburg., Pa.

NOTICE

Final Fee effective June 1, 1930.
\$25, with \$1.00 additional for
each claim in excess of 20.

IN REMITTING THE FINAL FEE GIVE THE SERIAL NUMBER AT THE HEAD OF THIS NOTICE.

UNCERTIFIED CHECKS WILL NOT BE ACCEPTED.

25
REC'D
JUN - 5 80
C.C.U.S.PAT.OFFICE

227

FINAL FEE PAID TO THE COMMISSIONER OF PATENTS

(Be careful to give correct Serial No.)

Serial No. 235,550

INVENTOR:

James M. J. Fullman.

PATENT TO BE ISSUED TO:

National Metal Molding Company.

NAME OF INVENTION, AS ALLOWED:

Connector for Electrical Conduits.

DATE OF PAYMENT:

June 5, 1930.

FEE:

\$20.

\$25.50

DATE OF FILING:

July 26, 1928.

DATE OF CIRCULAR OF ALLOWANCE:

June 2, 1930.

The Commissioner of Patents will please apply the accompanying fee as indicated above.

Christy, Christy & Wharton,

Christy, Christy & Wharton
Attorney's.

SEND PATENT TO:

Christy, Christy & Wharton,

P. O. Box #250.

Pittsburgh, Pa.

Final fees will not be received from other than the applicant, his assignee or attorney, or a party in interest as shown by the records of the Patent Office.

July 8, 1930.

J. M. G. FULLMAN

1,769,947

CONNECTER FOR ELECTRICAL CONDUITS

Filed July 26, 1928

Fig. I.

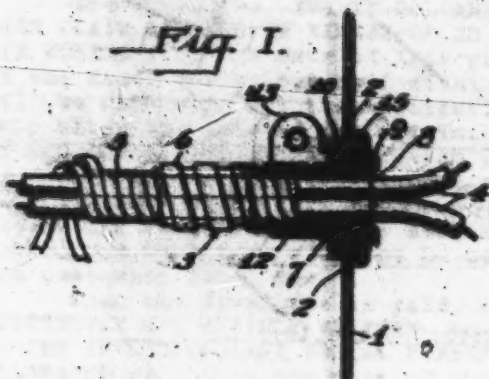


Fig. II.



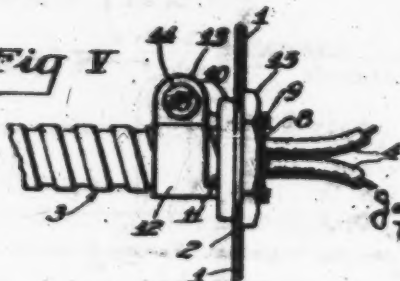
Fig. III.



Fig. IV.



Fig. V.



WITNESS

Attest

INVENTOR

James M. G. Fullman
by Christy & Christy
attys

Patented July 8, 1930

182
1,769,947

UNITED STATES PATENT OFFICE

JAMES M. G. FULLMAN, OF SHWICKLEY, PENNSYLVANIA, ASSIGNOR TO NATIONAL METAL HOLDING COMPANY, OF PITTSBURGH, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA

CONNECTER FOR ELECTRICAL CONDUITS

Application filed July 24, 1928. Serial No. 296,530.

In connecting electrical conduits and armored cables to outlet boxes and other electrical fittings it is usual to cut away the conduit wall or the sheath of the cable and to pass the unsheathed conductors into the box for making the desired electrical connections. In the use of metallic conduits, and particularly in the case of so-called flexible metallic armored cable, this leaves a more or less ragged metallic edge which often abrades or cuts into the insulation on the exposed conductors, and is likely to cause short circuits and other injurious effects. In order to shield the exposed conductors from the edge of the cut-away metallic armor it has been proposed recently to provide a bushing of insulating material which can be slipped over the exposed conductors where the armor is cut away, and having a shoulder bearing against the sharp metallic edge of the armor, as shown and described in Letters Patent No. 1,687,013, dated October 9th, 1928. When such a bushing is used at the joint between an armored cable and an outlet box with connectors of the present usual types, it is largely or altogether hidden within the connector, so that its presence is not apparent to an inspector or other observer. The present invention provides an improved connector binding the cable to the outlet box, and having means for holding the insulating and protective bushing in place, which will permit the bushing to be visible, and thus permit ready inspection of the system.

In the accompanying drawings Figure 1 is a sectional elevation of an armored cable provided with an insulating bushing in its throat and joined to an outlet box by my improved connector. Figure 2 is a front elevation of the structure shown in Figure 1. Figure 3 is a view of the bushing in elevation, and Figure 4 is a front view thereof. Figure 5 is a view of the cable and connector in elevation, as shown in Figure 1.

The wall of the outlet box is designated by the numeral 1, and the usual outlet opening by the numeral 2. The flexible armored cable 3 herein shown is of the well known type. The conductors 4 have wound upon them a jacket 5 of helically coiled strips of

fibrous material, such as paper, and the metallic armor 6 is coiled tightly around the jacketed conductors. When the edge of the armor 6 has been cut away, the jacket 5 is unwound for a suitable distance and broken off, thus leaving an annular space around the conductors within the armored cable back of the cut-away edge. Into this space there is slipped around the conductors the split tubular bushing 7 formed of insulating material and having at its outer edge the integral shoulder 8 which bears against the cut-away edge of the armor, leaving the exposed conductors 4 projecting therefrom. The connector may be of a variety of suitable forms, but for purposes of illustration I have shown herein the usual pinch connector having a forward cylindrical threaded portion 9 projecting through the opening in the outlet box, with the shoulder 10 bearing against the outer face of the wall of the box, the transverse slit 11, and the rearwardly projecting bifurcated barrel portion 12 having the opposite ears 13 connected by the binding screw 14, by means of which the bifurcated barrel portion is caused to pinch the armored cable tightly. The connector is held in place in the opening by means of the lock nut 15 screwed upon the threaded inner portion 9 and bearing against the inner face of the wall of the box.

In order to retain the bushing in place in such a way that it will be visible to an observer, the connector is provided at the inner edge of the portion 9 with a plurality of inwardly projecting fingers which overhang and bear upon the outer face of the shoulder 8 of the bushing, preventing its displacement, while at the same time the bushing between the fingers is readily visible to an inspector or other observer. In fact, as shown in Figures 1 and 5, the shoulder of the bushing projects slightly beyond the side edge of the lock nut 15, so that it can be seen from the side as well as from the front. This is of considerable practical advantage in the installation and inspection of electrical conduit systems of this type.

It will be understood that the specific form of the connector may be varied, and it

2

1,788,947

UNITED STATES PATENT OFFICE

will also be understood that while the invention is of particular advantage in the use of a cable having an armored cable, it may be used to advantage in the installation of electrical conductors of other forms.

I claim as my invention:

1. The combination with an armored cable of a bushing of insulating material having a tubular barrel portion contained within the cable armor and a shoulder bearing against the end of the armor, and a connector and means for securing it to the cable, said connector having a portion projecting beyond the end of the cable armor and having means for retaining the bushing in place.
2. The combination with an electrical conduit, of a bushing having a tubular barrel portion contained within the conduit and a shoulder bearing against the end of the conduit, and a connector and means for securing it to the conduit, said connector having means for retaining the bushing in place while leaving it visible to ocular inspection.

In testimony whereof I have hereunto set my hand.

JAMES M. G. FULLMAN.

32/20

181 #5

District Court of the United States

DISTRICT OF Connecticut

HONORABLE COMMISSIONER OF PATENTS,
Washington, D. C.

SIR:

In compliance with the Act of February 18, 1923 (42 Stat. L. 392), you are advised that there was filed on the 25th day of July, 1934 in this court an action, suit, or proceeding No. 2372 Equity, entitled:

Name The Thomas & Betts Co. et al, Plaintiff,
Address Elizabeth, New Jersey

versus

Name The Sterling Manufacturing Co. Inc., Defendant,
Address Stratford, Conn.

brought upon the following patents:

PATENT NO.	DATE OF PATENT	PATENTEE
1, 760,947	July 8, 1930	National Metal Molding Co., Pittsburgh, Pa.
2		
3		
4		
5		

In the above-entitled case, on the _____ day of _____, 1934, the following patents have been included by _____ (insert amendment) answer, cross bill, or other pleading):

PATENT NO.	DATE OF PATENT	PATENTEE
1		
2		
3		
4		
5		

In the above-entitled case the following decision has been rendered or decree issued:

IN WITNESS WHEREOF I have affixed my hand this 25th day of July, 1934 at New Haven, Connecticut.

E. E. Ritt
Clerk of said Court.

185

PAID ROOM

U.S. DISTRICT COURT

District Court of the United States

Eastern DISTRICT OF New York

 Honorable Commissioners of Patents,
 Washington, D. C.

Sir:

 In compliance with the Act of February 19, 1903 (32 Stat. 1, 1903), you are advised that there was filed on the 27th day of September, 1904, in this court an action, suit,
proceeding No. 6783, entitled:Name The American & British Co., Inc., Plaintiff,Address Elizabeth, New JerseyName Imperial Electrical Supply Co., Inc., Defendant,Address Brooklyn, N.Y.

brought upon the following patents:

PATENT NO.	DATE OF PATENT	PATENTEE
1. 1,769,947	July 5-1930	James M. S. Fullmer
2		
3		
4		
5		

 In the above-entitled case, on the _____ day of _____, 1903, the following patents have been included by _____ (insert amendment)

answer, cross bill; or other pleading):

PATENT NO.	DATE OF PATENT	PATENTEE
1		
2		
3		
4		
5		

In the above-entitled case the following decision has been rendered or decreed:

20th

186

District Court of the United States
Eastern District of New York

HONORABLE CLERK OF PATENTS,
 Washington, D. C.

Sir:

In compliance with the Act of February 18, 1902 (32 Stat. L. 382), you are advised that there was filed
 on the 29th day of September, 1934, in this court an action, suit, or

proceeding No. E 7383, entitled:

Name The Thomas & Betts Co., et al., Plaintiff,

Address Elizabeth, N. J.

Name Imperial Electrical Supply Co., Inc. et al., Defendant,

Address Brooklyn, N. Y.

brought upon the following patents:

PATENT NO.	DATE OF PATENT	PATENTEE
1. <u>1,769,947</u>	<u>July 5-1930</u>	<u>James M. G. Fullman</u>
2.		
3.		
4.		
5.		

In the above-entitled case, on the _____ day of _____, 1934, the
 following patents have been included by _____ (insert amendment,
 answer, cross bill, or other pleading):

PATENT NO.	DATE OF PATENT	PATENTEE
1.		
2.		
3.		
4.		
5.		

In the above-entitled case the following decision has been rendered or decree issued:

Decree in favor of plaintiff.
Filed & entered January 23-1935
 IN WITNESS WHEREOF I have affixed my hand this 23rd day of Jan.

HONORABLE COMMISSIONER OF PATENTS,
Washington, D. C.

Sir:

In compliance with the Act of February 22, 1923 (42 Stat. L. 592), you are advised that there was filed on the 29th day of September, 1934, in this court an action, suit, or

proceeding No. E 283, entitled:

Name Shulman, Elizabeth, et al., Plaintiff,

Address Elizabeth, New Jersey

Name Imperial Electrical Supply Co., Inc. Defendant,

Address Brooklyn, N.Y.

brought upon the following patents:

PATENT NO.	DATE OF PATENT	PATENTEE
1. <u>1,769,947</u>	<u>July 8 - 1930</u>	<u>James M. S. Fullman</u>
2.		
3.		
4.		
5.		

In the above-entitled case, on the _____ day of _____, 1934, the following patents have been included by _____ (insert amendment, answer, cross bill, or other pleading):

PATENT NO.	DATE OF PATENT	PATENTEE
1.		
2.		
3.		
4.		
5.		

In the above-entitled case the following decision has been rendered or decree issued:

IN WITNESS WHEREOF I have affixed my hand this

29th day of September, 1934, at Brooklyn, N.Y.

Condy B. Selles
Clerk of said Court.

Ray D. Finner
Deputy Clerk 324

See:

In compliance with the Act of February 18, 1922 (42 Stat. L. 382), you are advised that there was filed
on the 29th day of September, 1934, in this court an action, suit, or

proceeding No. E-7383, entitled:

Name The Luman & Betts Co., et al., Plaintiff,

Address Elizabeth, N.J.

Name Imperial Electrical Supply Co., Inc., Defendant,

Address Brooklyn, N.Y.

brought upon the following patents:

PATENT NO.	DATE OF PATENT	PATENTEE
<u>1,769,947</u>	<u>July 8-1930</u>	<u>Jama M. S. Fullman</u>
<u>(Filing of Complaint Reported</u>		
<u>September - 29-1934)</u>		

In the above-entitled case, on the _____ day of _____, 1934, the
following patents have been included by _____ (Insert amendment,
answer, cross bill, or other pleading):

PATENT NO.	DATE OF PATENT	PATENTEE

In the above-entitled case the following decision has been rendered or decree issued:
Decree decree favor plff.
Filed & entered January 23-1935

IN WITNESS WHEREOF I have affixed my hand this 23rd day of
January, 1935, at Brooklyn, N.Y.

Henry B. Hines
Clerk of said Court.
Wm. H. Keener
Deputy Clerk



District Court of the United States

DISTRICT OF N. Y.

HONORABLE COMMISSIONER OF PATENTS,
Washington, D. C.

Ser:

In compliance with the Act of February 16, 1902 (32 Stat. L. 389), you are advised that there was filed

on the 5th day of Dec., 1905, in this court an action, suit, or
proceeding No. EN-229, entitled:

Name The Thomas & Betts Co. a corporation (N.J.) and National
Electric Products Corporation, a corporation (Delaware), Plaintiff,

vs.

Name Electrical Fittings Corporation, a corporation, Joselson
Electric Corporation, a corporation, Samuel Joselson and Belle Joselson
individually, Defendant,

Address New York

brought upon the following patents:

PATENT NO.	DATE OF PATENT	PATENTEE
1. <u>1,769,947</u>	<u>7/8/30</u>	<u>National Metal Building Co.</u>
2. _____	_____	_____
3. _____	_____	_____
4. _____	_____	_____
5. _____	_____	_____

In the above-entitled case, on the _____ day of _____, 1905, the
following patents have been included by _____ (insert amendment,
answer, cross bill, or other pleading):

PATENT NO.	DATE OF PATENT	PATENTEE
1. _____	_____	_____
2. _____	_____	_____
3. _____	_____	_____
4. _____	_____	_____
5. _____	_____	_____

In the above-entitled case the following decision has been rendered or decree issued:

MAILED 12

988

OCT - 3

District Court of the United States

DISTRICT OF N.Y.

HONORABLE COMMISSIONER OF PATENTS,
Washington, D. C.

SEN:

In compliance with the Act of February 12, 1922 (42 Stat. L. 362), you are advised that there was filed on the 5th day of October, 193⁵, in this court an action, suit, or proceeding No. N 51-230, entitled:

Name The Thomas & Betts Co. a corporation (N.Y.) and National Electric Products Corporation, a corporation (Delaware) Plaintiff,

Address _____

VERSUS

Name Sialite Sales Corporation, a corporation Defendant,

Address 1234 New York

brought upon the following patents:

PATENT NO.	DATE OF PATENT	PATENTEE
1. <u>1,759,947</u>	<u>7/8/30</u>	<u>National Metal Moulding Co.</u>
2. _____	_____	_____
3. _____	_____	_____
4. _____	_____	_____
5. _____	_____	_____

In the above-entitled case, on the _____ day of _____, 193⁵, the following patents have been included by _____ (insert amendment, answer, cross bill, or other pleading):

PATENT NO.	DATE OF PATENT	PATENTEE
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

In the above-entitled case the following decision has been rendered or decree issued:

as stipulated with the Act of February 10, 1905 (34 Stat. 12, 605), you are advised that there was filed
on the 5th day of Dec., 1935, in this court an action, suit, or
proceeding No. EP-329, entitled:

Name The Thomas A. Betts Co. a corporation (N.J.) and National
Electric Products Corporation, a corporation (Delaware), Plaintiff,
vs.

Name Electrical Fittings Corporation, a corporation, Josephson Defendant
Sales Corporation, a corporation, Samuel Josephson and Belle Josephson
Address New York

brought upon the following patents:

PATENT NO.	DATE OF PATENT	PATENTEE
1. <u>1,789,947</u>	<u>7/8/30</u>	<u>National Metal Building Co.</u>
2.		
3.		
4.		
5.		

In the above-entitled case, on the _____ day of _____, 193, the
following patents have been included by _____ (insert amendment,
answer, cross bill, or other pleading):

PATENT NO.	DATE OF PATENT	PATENTEE
1.		
2.		
3.		
4.		
5.		

In the above-entitled case the following decision has been rendered or decree issued:

IN WITNESS WHEREOF I have affixed my hand this 5th day of

Oct., 1935, at

N.Y.

Charles Weiner
Clerk of said Court.

32/24

Size:

In compliance with the Act of February 18, 1922 (42 Stat. L. 382), you are advised that there was filed on the 5th day of October, 1935, in this court an action, suit, or proceeding No. T 81-230, entitled:

Name The Thomas & Betts Co. a corporation (N.J.) and National Electric Products Corporation, a corporation (Delaware), Plaintiff,

Address _____

Defendant

Name Simalite Sales Corporation, a corporation, Defendant,

Address 1101 New York

brought upon the following patents:

PATENT NO.	DATE OF PATENT	PATENTEE
1. <u>1,769,947</u>	<u>7/8/30</u>	<u>National Metal Moulding Co.</u>
2. _____	_____	_____
3. _____	_____	_____
4. _____	_____	_____
5. _____	_____	_____

In the above-entitled case, on the _____ day of _____, 1935, the following patents have been included by _____ (insert amendment, answer, cross bill, or other pleading):

PATENT NO.	DATE OF PATENT	PATENTEE
1. _____	_____	_____
2. _____	_____	_____
3. _____	_____	_____
4. _____	_____	_____
5. _____	_____	_____

In the above-entitled case the following decision has been rendered or decree issued:

IN WITNESS WHEREOF I have affixed my hand this 5th day of Oct, 1935, at N.Y.

Charles Heiser
Clerk of said Court.

189



District Court of the United States

-10

SOUTHERN DISTRICT OF New York

HONORABLE COMMISSIONER OF PATENTS,
Washington, D. C.

Sir:

In compliance with the Act of February 18, 1922 (42 Stat. L. 382), you are advised that there was filed on the 5th day of October, 1935, in this court an action, suit, or proceeding No. 21-233, entitled:

Name The Thomas & Betts Co. a corporation (N.J.) and National, Plaintiff.

~~vs.~~ Electric Products Corporation, a corporation (Delaware)

DEFEND

Name Leo Hirschberg, doing business as Grand Brass & Electrical Supply Co. Defendant,

Address N.Y.

brought upon the following patents:

PATENT NO.	DATE OF PATENT	PATENTEE
1 <u>1,769,947</u>	<u>7/8/30</u>	<u>National Metal Moulding Co.</u>
2		
3		
4		
5		

In the above-entitled case, on the _____ day of _____, 1935, the following patents have been included by _____ (insert amendment, answer, cross bill, or other pleading):

PATENT NO.	DATE OF PATENT	PATENTEE
1		
2		
3		
4		
5		

In the above-entitled case the following decision has been rendered or decree issued:

IN WITNESS WHEREOF I have affixed my hand this 5th day of Oct., 1935, at N.Y.

196

#11

DEC 20 1935
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District Court of the United States

DISTRICT OF New York

HONORABLE COMMISSIONER OF PATENTS,
Washington, D. C.

SIR:

In compliance with the Act of February 18, 1923 (42 Stat. L. 382), you are advised that there was filed on the 5th day of Dec., 1935, in this court an action, suit, or proceeding No. EP-230, entitled:

Name The Thomas Bates Co. (N.Y.) and, Plaintiff,

Address National Electric Producers Corp. (Delaware)

Name Similes Sales Corp., Defendant,

Address N.Y.

brought upon the following patents:

PATENT NO.	DATE OF PATENT	PATENTEE
1. <u>6769,947</u>	<u>7/8/30</u>	<u>Natl. Metal Moulding Co.</u>
2.		
3.		
4.		
5.		

In the above-entitled case, on the _____ day of _____, 1935, the following patents have been included by _____ (insert amendment, answer, cross bill, or other pleading):

PATENT NO.	DATE OF PATENT	PATENTEE
1.		
2.		
3.		
4.		
5.		

In the above-entitled case the following decision has been rendered or decree issued:

IN WITNESS WHEREOF I have affixed my hand this 16th day of Dec. 1935 N.Y.

HONORABLE COMMISSIONER OF PATENTS,
Washington, D. C.

Sir:

In compliance with the Act of February 18, 1922 (42 Stat. L. 383), you are advised that there was filed on the 5th day of October, 1935, in this court an action, suit, or proceeding No. N 81-133, entitled:

Name The Thomas & Betts Co. a corporation (N.Y.) and National, Plaintiff,

~~vs.~~ Electric Products Corporation, a corporation (Delaware)

VERSUS

Name Leo Hirschberg, doing business as Grand Brass & Electrical Supply Co. Defendant,

Address N.Y.

brought upon the following patents:

PATENT NO.	DATE OF PATENT	PATENTEE
1,769,947	7/8/30	National Metal Moulding Co.
2		
3		
4		
5		

In the above-entitled case, on the _____ day of _____, 1935, the following patents have been included by _____ (insert amendment, answer, cross bill, or other pleading):

PATENT NO.	DATE OF PATENT	PATENTEE
1		
2		
3		
4		
5		

In the above-entitled case the following decision has been rendered or deemed issued:

IN WITNESS WHEREOF I have affixed my hand this 5th day of Oct., 1935, at N.Y.

Charles H. Stein
Clerk of said Court.

HONORABLE COMMISSIONER OF PATENTS,
Washington, D. C.

Sir:

In compliance with the Act of February 12, 1923 (43 Stat. L. 308), you are advised that there was filed on the 5th day of Oct, 1925, in this court an action, suit, or proceeding No. 81-230, entitled:

Name The Thomas Betts Co. (N.J.) and, Plaintiff,

Address National Electric Producers Corp. (Delaware)

Name Simlita Sales Corp., Defendant,

Address N. Y.

brought upon the following patents:

PATENT NO.	DATE OF PATENT	PATENTEE
1. <u>6769,947</u>	<u>7/8/30</u>	<u>Natl. Metal Moulding Co.</u>
2.		
3.		
4.		
5.		

In the above-entitled case, on the _____ day of _____, 193 , the following patents have been included by _____ (insert amendment, answer, cross bill, or other pleading):

PATENT NO.	DATE OF PATENT	PATENTEE
1.		
2.		
3.		
4.		
5.		

In the above-entitled case the following decision has been rendered or decree issued:

IN WITNESS WHEREOF I have affixed my hand this 16th day of

Dec, 1925, at N. Y.

Charles Heiser
Clerk of said Court.

11/4/25
1928

CONTENTS:

1. <u>Agreement</u> <u>page</u>	26. _____
2. <u>Resolution</u> <u>APR 13 1929</u>	27. _____
3. <u>Agreement</u> <u>Aug. 26 1929</u>	28. _____
4. <u>Agreement</u> <u>Aug. 26 1929</u>	29. _____
5. <u>Agreement</u> <u>July 26, 1934</u>	30. _____
6. <u>Notice of sale</u> <u>Oct. 1 - 1934</u>	31. _____
7. <u>Notice of sale</u> <u>Jan. 24 - 1935</u>	32. _____
8. <u>Notice of sale</u> <u>Oct. 9 - 1935</u>	33. _____
9. <u>Notice of sale</u> <u>Oct. 9 - 1935</u>	34. _____
10. <u>Notice of sale</u> <u>Oct. 9 - 1935</u>	35. _____
11. <u>Notice of sale</u> <u>Dec. 30 - 1935</u>	36. _____
12. _____	37. _____
13. _____	38. _____
14. _____	39. _____
15. _____	40. _____
16. _____	41. _____
17. _____	42. _____
18. _____	43. _____
19. _____	44. _____
20. _____	45. _____

32/28

DEFENDANT'S EXHIBIT A

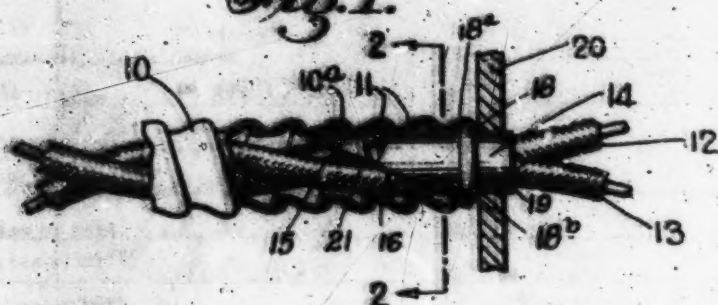
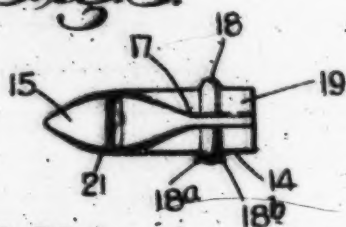
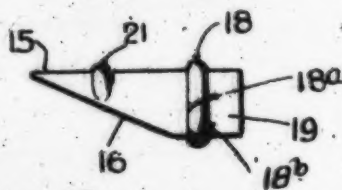
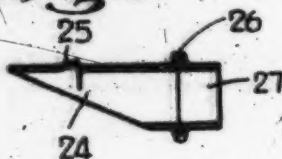
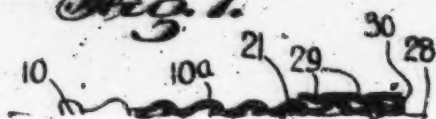
Jan. 7, 1930.

E. J. SCHNEIDER ET AL

1,742,488

INSULATION SHIELD FOR ELECTRIC WIRING

Filed March 21, 1929

Fig. 1.*Fig. 2.**Fig. 3.**Fig. 5.**Fig. 4.**Fig. 6.**Fig. 7.*

UNITED STATES PATENT OFFICE

EDWIN J. SCHNEIDER, OF JAMAICA, AND MERRITT B. BRADY, OF BROOKLYN, NEW YORK, ASSIGNORS TO EASTERN TUBE AND TOOL CO. INC., OF BROOKLYN, NEW YORK, A CORPORATION OF NEW YORK.

INSULATION SHIELD FOR ELECTRIC WIRING

Application filed March 21, 1928. Serial No. 308,744.

This invention relates to electric wiring of various kinds and classes and especially where two or more wires are arranged in and passed through a metallic outer casing or jacket of any kind or class and particularly to the provision of a shield of insulating material adapted to be arranged within an end portion of the casing and between it and the wires contained therein to protect said wires and shield them from coming in contact with sharp edges of said casing; and the object of the invention is to provide a shield of the class and for the purpose specified, the main body portion of which is shield-like in form and comprises an arc-shaped wall, opposite side edges of which are curved and tapered to form a pointed or prong-like end and the other end of the shield extending in the form of a split tube forming a finger piece and insulating collar, a further object being to provide adjacent the last named or collar end of the shield, an annular outwardly projecting member which forms a stop and flange adapted to overlap the edge of the metallic casing, said enlarged portion being preferably tapered at its free end to operate as a wedge to securely retain the shield in position and to place the wires under slight compression within the outer casing and to expand said outer casing when composed of the flexible type; a further object being to provide the inner or prong end portion of the shield with an outwardly pruned portion adapted to engage one of the coils of a flexible metallic casing to aid in covering the shield against displacement; a still further object being to provide a shield of the class described which is composed of inexpensive material, and which is preferably coated with a greasy or wax-like element to render the same moisture proof and to facilitate the operation of applying the same; and with these and other objects in view, the invention consists in an insulator of the class and for the purpose specified, which is simple in construction.

arate parts of our improvement are designated by suitable reference characters in each of the views, and in which—

Fig. 1 is a diagrammatic, sectional view, illustrating one method of arranging a shield made according to the invention, within a metallic casing and between it and the wires contained therein.

Fig. 2 is a section on the line 2-2 of Fig. 1.

Fig. 3 is a face view of the shield shown in Fig. 1, detached.

Fig. 4 is a side view of the shield shown in Fig. 3.

Fig. 5 is a longitudinal, sectional view through a shield showing a slight modification.

Fig. 6 is a view similar to Fig. 5 showing another modification, and,

Fig. 7 is a view similar to Fig. 1 showing another modification.

In Figs. 1 and 2 of the drawing, a conductor or cable of the flexible armored type is shown to illustrate one use of the invention. In these figures, 10 represents a flexible metallic casing fashioned from a spirally wound strip of metal 10', the side edges of which are fashioned to interlock adjacent windings as in conventional casings of this class, and this structure forms spiral recesses 11 on the inner surface of the casing. It will be understood at this time that the outer metal casing may be of any desired form and construction and may constitute a metal tube. Arranged in the casing 10 are two or more insulated conductors, two of which are shown in the accompanying drawing and are designated by the reference numerals 12 and 13. These conductors may be of any desired construction in so far as the insulation is concerned.

At 14, we have shown one of our improved insulator shields, which shield is shown in Figs. 1 to 4 inclusive, the same being made from inexpensive, flexible and yet firm in-

Jan. 7, 1930.

E. J. SCHNEIDER ET AL.

1,742,488

INSULATION SHIELD FOR ELECTRIC WIRING

Filed March 21, 1929

Fig. 1.

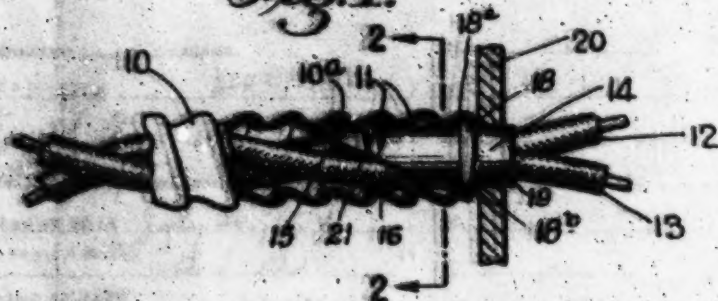


Fig. 2.

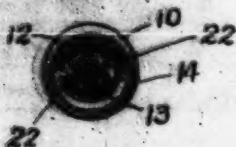


Fig. 3.

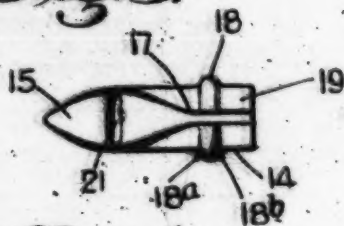


Fig. 5.

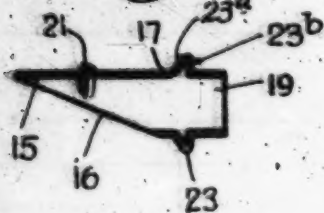


Fig. 4.

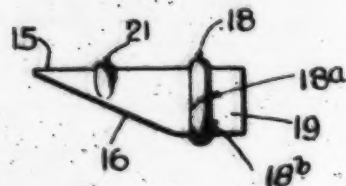
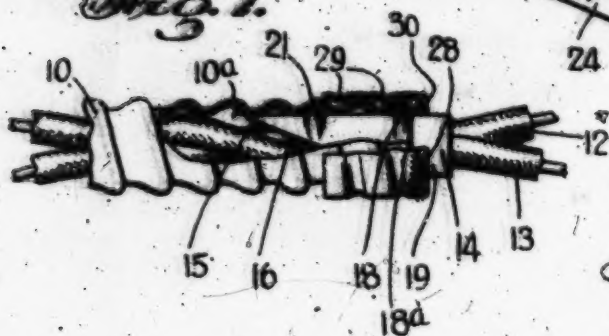


Fig. 6.



Fig. 7.



INVENTORS
Edwin J. Schneider
Herbert B. Bratt
BY *Amos E. Thompson*
ATTORNEY

UNITED STATES PATENT OFFICE

EDWIN J. SCHNEIDER, OF JAMAICA, AND HERBERT E. BRADY, OF BROOKLYN, NEW YORK, ASSIGNORS TO EASTERN TUBE AND TOOL CO. INC., OF BROOKLYN, NEW YORK, A CORPORATION OF NEW YORK

INSULATION SHIELD FOR ELECTRICAL WIRING

Application filed March 21, 1922. Serial No. 244,744.

This invention relates to electric wiring of various kinds and classes and especially where two or more wires are arranged in and passed through a metallic outer casing or jacket of any kind or class and particularly to the provision of a shield of insulating material adapted to be arranged within an end portion of the casing and between it and the wires contained therein to protect said wires and shield them from coming in contact with sharp edges of said casing; and the object of the invention is to provide a shield of the class and for the purpose specified, the main body portion of which is shield-like in form and comprises an arc-shaped wall, opposite side edges of which are curved and tapered to form a pointed or prong-like end and the other end of the shield extending in the form of a split tube forming a flange plane and insulating collar, a further object being to provide adjacent the last named or collar end of the shield, an annular outwardly projecting member which forms a stop and flange adapted to overlap the edge of the metallic casing, said enlarged portion being preferably tapered at its free end to operate as a wedge to securely retain the shield in position and to secure the wires under slight compression within the outer casing and to expand said outer casing when composed of the flexible type; a further object being to provide the inner or prong end portion of the shield with an outwardly flanged portion adapted to engage one of the coils of a flexible metallic spring to aid in securing the shield against displacement; a still further object being to provide a shield of the class described which is composed of inexpensive material, and which is preferably coated with a greasy or wax-like element to render the same moisture proof and to facilitate the operation of applying the same; and with these and other objects in view, the invention consists in an insulator of the class and for the purpose specified, which is simple in construction, efficient in use, and which is constructed as hereinafter described and claimed.

The invention is fully disclosed in the following specification, of which the accompanying drawing forms a part, in which the (up-

ward parts of our improvement are designated by suitable reference characters in each of the views, and in which:—

Fig. 1 is a diagrammatic, sectional view, illustrating one method of arranging a shield made according to the invention, within a metallic casing and between it and the wires contained therein.

Fig. 2 is a section on the line 2—2 of Fig. 1.

Fig. 3 is a face view of the shield shown in Fig. 1, detached.

Fig. 4 is a side view of the shield shown in Fig. 3.

Fig. 5 is a longitudinal, sectional view through a shield showing a slight modification.

Fig. 6 is a view similar to Fig. 5 showing another modification, and,

Fig. 7 is a view similar to Fig. 1 showing another modification.

In Figs. 1 and 2 of the drawing, a conductor or cable of the flexible armored type is shown to illustrate one use of the invention. In these figures, 10 represents a flexible metallic casing fashioned from a spirally wound strip of metal 10', the side edges of which are fashioned to interlock adjacent windings as in conventional casings of this class, and this structure forms spiral recesses 11 on the inner surface of the casing. It will be understood at this time that the outer metal casing may be of any desired form and construction and may constitute a metal tube. Arranged in the casing 10 are two or more insulated conductors, two of which are shown in the accompanying drawing and are designated by the reference numerals 12 and 13. These conductors may be of any desired construction in so far as the insulation is concerned.

At 14, we have shown one of our improved insulator shields, which shield is shown in Figs. 1 to 4 inclusive, the same being made from inexpensive, flexible and yet firm insulating material of any kind or class such for example as fibre, bakelite, hard rubber, paper board and so forth, one end portion of the shield being fashioned to form a pointed or pronged end 15, the side walls 16 of which are curved and tapered in the manner shown

from the pointed end 15 to the point 17 where the shield is substantially cylindrical in form, being split longitudinally of its wall to permit the expansion and contraction of the shield in the operation of inserting it into the casing 10.

Outwardly of the point 17, the shield is provided with an annular body 18, the inner wall 18^a of which tapers gradually onto the cylindrical wall and the outer wall 18^b of which is similarly tapered, the latter being more abrupt however, and the wall 18^b terminates in a straight cylindrical and projecting collar 19 which serves as a finger piece and as an insulating collar adapted to be arranged within an aperture in a fixture casing or other body part 20 which is partially illustrated in Fig. 1 of the drawing, so as to insulate the conductors 12 and 13 where it passes into and through the body 21. It is also preferred that the pointed end portion of the shield be provided with an outwardly pronged head 21 arranged substantially centrally of said pronged end portion and at a point opposite the split side of the shield to form a retaining member of said head which will operate in the recesses 11 of one of the shields to aid in holding the shield against displacement.

In armored conductors of the class referred to, the arrangement of the conductors 12 and 13 within the casing 10 forms at opposite sides of the casing and therewithin, valleys or spaces designated by the reference numeral 22, note Fig. 2. In the use of the shield, the pointed or pronged end 15 thereof is inserted into the casing by placing said end in one of the recesses 22. As the prong is pressed into the casing 10 and around the conductors 12 and 13, the curved and beveled walls 16 of the shield operate to feed and guide the shield in its inward movement, offering no resistance in this operation except that the head 21 will establish a slight resistance in passing over the inwardly projecting portions arranged between the recesses 11.

In completing the inward movement of the shield, the beveled wall 16^a of the annular body 18 will operate to firmly compress the conductors 12 and 13 and further to expand the casing 10, especially when this casing is constructed of the flexible type. If a rigid casing is employed, the result will be simply to compress and firmly retain the conductors in position and also to support the shield. It will be understood that the collar 19 will extend beyond the free end of the casing, and

designate like parts, and substituted for the head 18 is a head 23, differing from the head 18 in that one wall 23^a tapers gradually onto the wall of the pronged end up to the point 17, whereas the other wall 23^b is arranged at right angles to the longitudinal wall of the shield.

In Fig. 3 of the drawing, we have shown another modification wherein the pronged end 24 of this shield has a freely flexing tongue part or lock shoulder 25 cut therefrom instead of the head 21. The arrangement of the shoulder 25 is such as to permit the shield to pass freely into the casing of a cable or to allow the same to extend into the recess 11 to retain the shield against accidental displacement.

In this construction, we have substituted for the annular heads 18 and 23 shown in the other figures, an annular head 26 which is more in the form of a flange and is fashioned by pressing the wall of the shield outwardly to form a flange of two-ply thickness which is adapted to butt against the outer edge of the casing 10 in the use of the shield. In other words, the beveled wall and wedge-like action accomplished thereby as in the other figures, will not take place in this structure, it being understood, however, that the placement of the shield in the casing and around the conductors, which normally fits snugly in the casing, is sufficient to place the conductors under slight compression, but the degree of operation will not be as great as in the use of the tapered wall structure shown in Figs. 1 to 5 inclusive. The shield shown in Fig. 6 also includes an outwardly projecting collar 27 which forms the retaining collar and finger piece as in the other structures.

In Fig. 7 of the drawing, we have shown another modification wherein a ferrule 28 of conventional form is employed in conjunction with a shield made according to the several disclosures, the shield shown in Figs. 1 to 5 inclusive being preferably employed, and like references will designate like parts with respect to said shield, which is designated at 14, and consists of the pronged end 15, tapered wall 16, the outwardly projecting member or head 18 and the collar 19.

The ferrule 28 is of a type having a screw threaded end portion 29 adapted to engage the axially arranged strips 10 in the manner of screwing a nut upon a thread. The projecting member 18 of the shield 14 is, preferably arranged in a position to maintain the

while this type of ferrule may be employed, it will also be understood that non-metallic devices of this class may be used. It is also preferred that the outer surfaces of the ferrule be roughened or nured to facilitate the attachment of the ferrule.

In the use of the device, the shield 14 is first placed in position between the conductors and the casing, after which the ferrule is applied and threaded upon the shield and the casing 10 as above stated, and the ferrule will operate to firmly draw the shield inwardly, as will be apparent.

It will be noted in considering Figs. 1 and 2 of the drawing, that the outside diameter of the shield or the enlargement thereof is within the boundaries of the diameter of the casing 10 so as not to introduce a projecting body. This will avoid the possibility of accidental displacement of the shield in handling the same, and will also facilitate the insertion of the cable into the knock out openings of terminal boxes of various kinds and classes.

It will be understood that while we have shown a few forms of shields for carrying our invention into effect, and have illustrated one particular use thereof, that our invention is not necessarily limited to the specific details of construction herein shown and described, nor to the uses herein set out, and various other changes in and modifications of the structure herein disclosed may be made within the scope of the appended claims without departing from the spirit of our invention or sacrificing its advantages.

Having fully described our invention, what we claim as new and desire to secure by Letters Patent, is:—

1. The combination with insulated electric conductors arranged in an outer metallic casing, of a shield composed of insulating material adapted to be arranged between the insulated conductors and said casing, the end of the shield inserted into the casing being of prong formation and the outer end of the shield comprising a split tube having an outwardly extending body adapted to engage the end portion of the casing to firmly retain the conductors within the casing and to insulate the same therefrom, and said outwardly extending body having a tapered wall whereby said shield may be wedged in position.

2. The combination with insulated electric conductors arranged in an outer metallic casing, of a shield composed of insulating material adapted to be arranged between the

ing body having a tapered wall, whereby said shield may be wedged in position, and the prong end of said body including an outwardly pressed member adapted to engage the bore of said casing to aid in retaining the shield against displacement.

3. The combination with insulated electric conductors arranged in an outer metallic casing, of a shield composed of insulating material adapted to be arranged between the insulated conductors and said casing, the end of the shield inserted into the casing being of prong formation and the outer end of the shield comprising a split tube having an outwardly extending body adapted to engage the end portion of the casing to firmly retain the conductors within the casing and to insulate the same therefrom, said outwardly extending body having a tapered wall whereby said shield may be wedged in position, and said shield including an outwardly projecting collar forming a finger piece and insulating member.

4. The combination with insulated electric conductors arranged in an outer metallic casing, of a shield composed of insulating material adapted to be arranged between the insulated conductors and said casing, the end of the shield inserted into the casing being of prong formation and the outer end of the shield comprising a split tube having an outwardly extending body adapted to engage the end portion of the casing to firmly retain the conductors within the casing and to insulate the same therefrom, and the side edge walls of the prong end of said shield being curved and tapered from the pointed end thereof to said outwardly extending body.

5. An insulator shield for conductors of the class specified comprising a split tubular body, the walls of the split portion being beveled and curved at one end of said body to form a prong end portion and the other end of said body having a radially and outwardly projecting member, one wall of which is tapered in the direction of the prong end of the body.

6. An insulator shield for conductors of the class specified comprising a split tubular body, the walls of the split portion being beveled and curved at one end of said body to form a prong end portion and the other end of said body having a radially and outwardly projecting member, one wall of which is tapered in the direction of the prong end of the body, and the last named end of the body having a collar formed between the prong end and the last named end of the body.

from the pointed end 15 to the point 17 where the shield is substantially cylindrical in form, being split longitudinally of its wall to permit the expansion and contraction of the shield in the operation of inserting it into the casing 10.

Outwardly of the point 17, the shield is provided with an annular body 18, the inner wall 18^a of which tapers gradually onto the cylindrical wall and the outer wall 18^b of which is similarly tapered, the latter being more abrupt however; and the wall 18^b terminates in a straight cylindrical and projecting collar 19 which serves as a finger piece and as an insulating collar adapted to be arranged within an aperture in a fixture casing or other body part 20 which is partially illustrated in Fig. 1 of the drawing, so as to insulate the conductors 12 and 13 where it passes into and through the body 20. It is also preferred that the pointed end portion of the shield be provided with an outwardly pronged bead 21 arranged substantially centrally of said pronged end portion and at a point opposite the split side of the shield to form a retaining member of said bead which will operate in the recesses 11 of one of the coils to aid in holding the shield against displacement.

In armored conductors of the class referred to, the arrangement of the conductors 12 and 13 within the casing 10 forms at opposite sides of the casing and therewithin, valleys or spaces designated by the reference numeral 22, note Fig. 2. In the use of the shield, the pointed or pronged end 15 thereof is inserted into the casing by placing said end in one of the recesses 22. As the prong is pressed into the casing 10 and around the conductors 12 and 13, the curved and beveled walls 16 of the shield operate to feed and guide the shield in its inward movement, offering no resistance in this operation except that the bead 21 will establish a slight resistance in passing over the inwardly projecting portions arranged between the recesses 11.

In completing the inward movement of the shield, the beveled wall 16^a of the annular body 18 will operate to firmly compress the conductors 12 and 13 and further to expand the casing 10, especially when this casing is constructed of the flexible type. If a rigid casing is employed, the result will be simply to compress and firmly retain the conductors in position and also to support the shield. It will be understood that the collar 19 will extend beyond the free end of the casing, and the body 18 serves as a shield or guard, arranged at the free edge of the casing in spaced relation with reference to the conductors by virtue of the air chamber formed within the bead outwardly of the conductors.

In Fig. 5 of the drawing, we have shown a slight modification of the structure shown in Figs. 1 to 4 inclusive. In this figure, the reference characters 15, 16, 17, 19 and 21 will

designate like parts, and substituted for the bead 18 is a bead 23, differing from the bead 18 in that one wall 23^a tapers gradually onto the wall of the pronged end up to the point 17, whereas the other wall 23^b is arranged at right angles to the longitudinal wall of the shield.

In Fig. 6 of the drawing, we have shown another modification wherein the pronged end 24 of this shield has a freely flexing tongue part or lock shoulder 25 cut therefrom instead of the bead 21. The arrangement of the shoulder 25 is such as to permit the shield to pass freely into the casing of a cable or to allow the same to extend into the recess 11 to retain the shield against accidental displacement.

In this construction, we have substituted for the annular beads 18 and 23 shown in the other figures, an annular bead 26 which is more in the form of a flange and is fashioned by pressing the wall of the shield outwardly to form a flange of two-ply thickness which is adapted to butt against the outer edge of the casing 10 in the use of the shield. In other words, the beveled wall and wedge-like action accomplished thereby as in the other figures, will not take place in this structure, it being understood, however, that the placement of the shield in the casing and around the conductors, which normally fits snugly in the casing, is sufficient to place the conductors under slight compression, but the degree of operation will not be as great as in the use of the tapered wall structure shown in Figs. 1 to 5 inclusive. The shield shown in Fig. 6 also includes an outwardly projecting collar 27 which forms the resulting collar and finger piece as in the other structures.

In Fig. 7 of the drawing, we have shown another modification wherein a ferrule 28 of conventional form is employed in conjunction with a shield made according to the several disclosures, the shield shown in Figs. 1 to 6 inclusive being preferably employed, and like references will designate like parts with respect to said shield, which is designated at 14, and consists of the pronged end 15, tapered wall 16, the outwardly projecting member or bead 18 and the collar 19.

The ferrule 28 is of a type having a screw threaded end portion 29 adapted to engage the spirally arranged strips 10^a in the manner of screwing a nut upon a thread. The projecting member 18 of the shield 14 is preferably arranged in a position to meet the threads 29 of the ferrule so as to provide means for locking the shield against displacement from the end of the casing 10. The collar end of the ferrule has an inwardly turned flange 30 engaging the enlargement or member 18 to accomplish this result. It will also be noted that the projecting collar serves to insulate conductors 12 and 13. It is customary to employ metallic ferrules, and

while this type of ferrule may be employed, it will also be understood that non-metallic devices of this class may be used. It is also preferred that the outer surfaces of the ferrule be roughened or nured to facilitate the attachment of the ferrule.

In the use of the device, the shield 14 is first placed in position between the conductors and the casing, after which the ferrule is applied and threaded upon the shield and the casing 10 as above stated, and the ferrule will operate to firmly draw the shield inwardly, as will be apparent.

It will be noted in considering Figs. 1 and 2 of the drawing, that the outside diameter of the shield or the enlargement thereof is within the boundaries of the diameter of the casing 10 so as not to introduce a projecting body. This will avoid the possibility of accidental displacement of the shield in handling the same, and will also facilitate the insertion of the cable into the knock out openings of terminal boxes of various kinds and classes.

It will be understood that while we have shown a few forms of shields for carrying our invention into effect, and have illustrated one particular use thereof, that our invention is not necessarily limited to the specific details of construction herein shown and described, nor to the uses herein set out, and various other changes in and modifications of the structure herein disclosed may be made within the scope of the appended claims without departing from the spirit of our invention or sacrificing its advantages.

Having fully described our invention, what we claim as new and desire to secure by Letters Patent, is:—

1. The combination with insulated electric conductors arranged in an outer metallic casing, of a shield composed of insulating material adapted to be arranged between the insulated conductors and said casing, the end of the shield inserted into the casing being of prong formation and the outer end of the shield comprising a split tube having an outwardly extending body adapted to engage the end portion of the casing to firmly retain the conductors within the casing and to insulate the same therefrom, and said outwardly extending body having a tapered wall whereby said shield may be wedged in position.

2. The combination with insulated electric conductors arranged in an outer metallic casing, of a shield composed of insulating material adapted to be arranged between the insulated conductors and said casing, the end of the shield inserted into the casing being of prong formation and the outer end of the shield comprising a split tube having an outwardly extending body adapted to engage the end portion of the casing to firmly retain the conductors within the casing and to insulate the same therefrom, said outwardly extend-

ing body having a tapered wall, whereby said shield may be wedged in position, and the prong end of said body including an outwardly pressed member adapted to engage the bore of said casing to aid in retaining the shield against displacement.

3. The combination with insulated electric conductors arranged in an outer metallic casing, of a shield composed of insulating material adapted to be arranged between the insulated conductors and said casing, the end of the shield inserted into the casing being of prong formation and the outer end of the shield comprising a split tube having an outwardly extending body adapted to engage the end portion of the casing to firmly retain the conductors within the casing and to insulate the same therefrom, said outwardly extending body having a tapered wall whereby said shield may be wedged in position, and said shield including an outwardly projecting collar forming a finger piece and insulating member.

4. The combination with insulated electric conductors arranged in an outer metallic casing, of a shield composed of insulating material adapted to be arranged between the insulated conductors and said casing, the end of the shield inserted into the casing being of prong formation and the outer end of the shield comprising a split tube having an outwardly extending body adapted to engage the end portion of the casing to firmly retain the conductors within the casing and to insulate the same therefrom, and the side edge walls of the prong end of said shield being curved and tapered from the pointed end thereof to said outwardly extending body.

5. An insulator shield for conductors of the class specified comprising a split tubular body, the walls of the split portion being beveled and curved at one end of said body to form a prong end portion and the other end of said body having a radially and outwardly projecting member, one wall of which is tapered in the direction of the prong end of the body.

6. An insulator shield for conductors of the class specified comprising a split tubular body, the walls of the split portion being beveled and curved at one end of said body to form a prong end portion and the other end of said body having a radially and outwardly projecting member, one wall of which is tapered in the direction of the prong end of the body, and the last named end of the body having a collar arranged outwardly of said member.

7. An insulator shield for conductors of the class specified comprising a split tubular body, the walls of the split portion being beveled and curved at one end of said body to form a prong end portion and the other end of said body having a radially and outwardly projecting member, one wall of which is

tapered in the direction of the prong end of the body, the last named end of the body having a collar arranged outwardly of said member, and another radially and outwardly pressed member arranged in said body intermediate the pointed end of said body and the first named member.

8. An insulator shield for armored conductors of the class specified, comprising a split tubular body of insulating material, one end portion of which is adapted to be inserted in the armor and arranged between it and the conductors, the outer end portion of said shield having a radially projecting annular member, the diameter of said member being substantially equal to the outside diameter of said armor, and said radially projecting member being arc-shaped in cross sectional form.

9. An insulator shield for conductors of the class specified comprising a split tubular body of insulating material, said body having a radially and outwardly extending member arranged inwardly of one end thereof, and one wall of said member being tapered in the direction of the other end of said body.

10. An insulator shield for conductors of the class specified comprising a split tubular body of insulating material, said body having a radially and outwardly extending member arranged inwardly of one end thereof, one wall of said member being tapered in the direction of the other end of said body, and the second named end of said body being of prong formation.

In testimony that we claim the foregoing as our invention we have signed our names this 18th day of March, 1929.

EDWIN J. SCHNEIDER.
MERRITT B. BRADT.

DEFENDANT'S EXHIBIT B

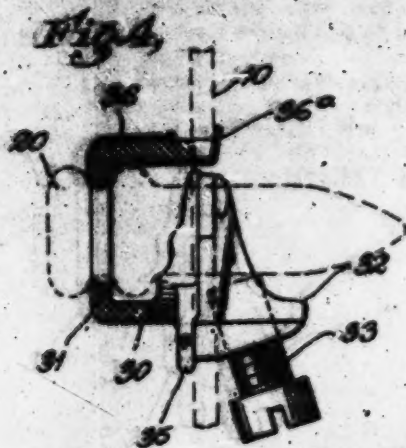
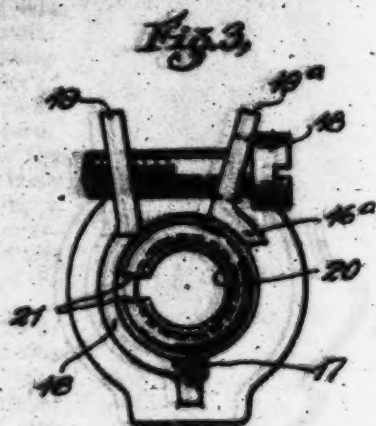
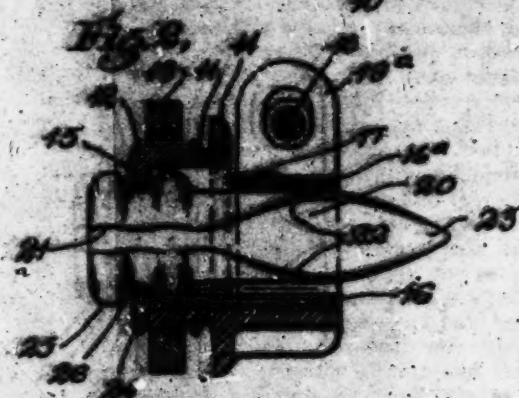
March 10, 1931.

E. J. SCHNEIDER ET AL

1,796,577

INSULATED COUPLER

Filed April 4, 1929



INVENTORS
Edwin J. Schneider
By _____

Patented Mar. 10, 1931

1,795,577

UNITED STATES PATENT OFFICE

ERWIN J. SCHNEIDER, OF JAMAICA, LONG ISLAND, AND HERBERT R. ROANE, OF BROOKLYN, NEW YORK, ASSIGNORS TO EASTERN TUBE AND TOOL CO. INC., OF BROOKLYN, NEW YORK, A CORPORATION OF NEW YORK

INSULATED COUPLING

Application filed April 4, 1929. Serial No. 593,004

This invention relates to couplings of various kinds and classes and particularly to devices of this class used in securing the ends of an armored cable in outlet boxes, fuse boxes, switch boxes, fuses and the like; and the object of the invention is to provide a coupling of conventional or any desired form and construction with a shield of insulating material coupled therewith in such manner as to constitute a unit part thereof and so as to provide an insulation for the conductors or wires where they extend outwardly through the armor of the cable and through the coupling; a further object being to provide an insulator shield of the class specified in the form of a split cylindrical body, one end portion of which is pronged to facilitate the insertion into the cable between the armor and the conductors and the other end portion of which is fashioned to form an annular recess in which a flange portion of the coupling operates to prevent accidental displacement of the shield with respect to the coupling and yet permitting the coupling to freely rotate with respect to the shield; a further object being to provide a shield of the class specified which may be used in conjunction with a ferrule to form an insulated and reinforced end portion to the armored cable where the conductors project therefrom, facilitating the mounting of the cable in connection with electrical boxes or conductors of any kind or class; and with these and other objects in view, the invention consists in a device of the class and for the purpose specified which is simple in construction, efficient in use, and which is constructed as hereinafter described and claimed.

The invention is fully disclosed in the fol-

Fig. 2 is an enlarged sectional view of a part of the construction shown in Fig. 1.

Fig. 3 is an end view of the structure as seen in Fig. 2.

Fig. 4 is a view similar to Fig. 2 showing a modified form of coupling.

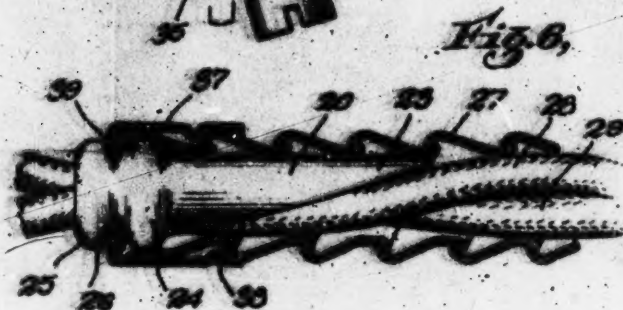
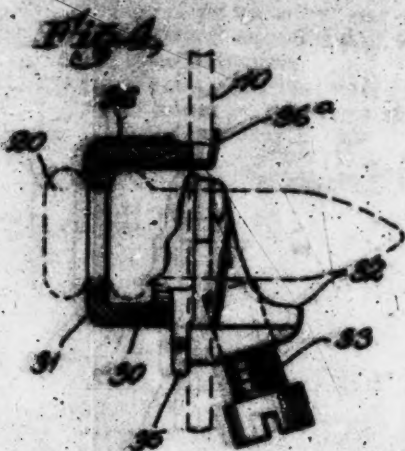
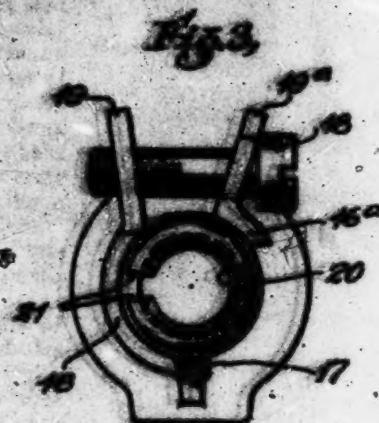
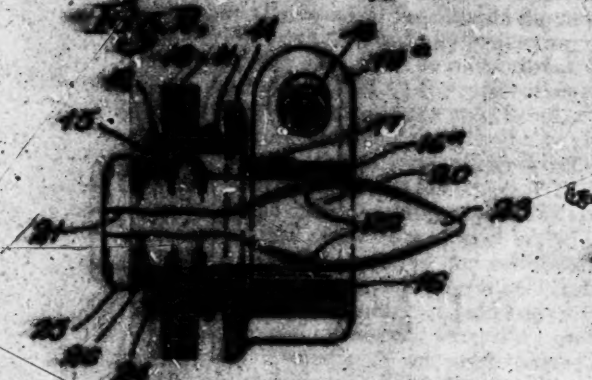
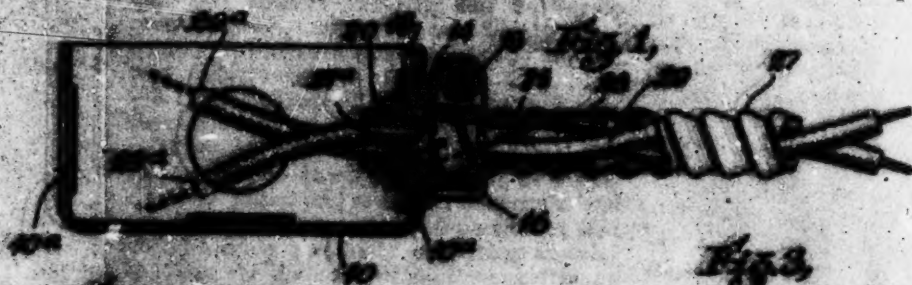
Fig. 5 is an end view of the structure shown in Fig. 4; and

Fig. 6 is a view similar to Fig. 1 showing only a part of the construction and showing another modification.

For the purpose of illustrating one use of our invention, we have shown in Fig. 1 of the drawing, one type of outlet box 10, and in Figs. 1 to 3 inclusive, one form of coupling used in conjunction with boxes of any kind or class such for example as fuse boxes, switch boxes or any kind of electric fixture, the coupling consisting of a tubular body 11, one end portion of which is externally threaded as seen at 12 to receive a nut 13, the coupling having an outwardly extending flange 14 centrally thereof, and the threaded end portion having an inwardly extending flange 15.

The other end portion is in the form of a split ring or collar 16, one side wall 16a of which is covered as seen at 17 to permit it to yield forming a clamp of said ring which may be gripped about the cable by the tightening of a screw 18 which is in threaded engagement with one wing 19 of the collar 16 and passes loosely through another wing 19a. This coupling is of conventional form and is adapted to pass through one of the knock out apertures 10a of the box 10 and is secured thereto by the nut 13 and flange 14 as seen in Fig. 1 of the drawing.

In carrying our invention into effect, we employ in conjunction with the coupling, an insulator shield 20 and the brief description



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ENCLOSED COUPLING

APPLIED FOR APR. 4, 1928. CASE NO. 512,361.

This invention relates to couplings of various kinds and classes and particularly to devices of this class used in coupling the ends of an armored cable in cable boxes, bus bars, switch boxes, distributors and the like; and the object of the invention is to provide a coupling of conventional or any desired form and construction with a shield of insulating material coupled therewith in such manner as to constitute a unit part thereof and so as to provide an insulation for the conductors or wires whose they extend outwardly through the center of the cable and through the coupling; a further object being to provide an insulator shield of the class specified in the form of a split cylindrical body, one end portion of which is pronged to facilitate the insertion into the cable between the armor and the conductors and the other end portion of which is fashioned to form an annular recess in which a flange portion of the coupling operates to prevent accidental displacement of the shield with respect to the coupling and yet permitting the coupling to freely rotate with respect to the shield; a further object being to provide a shield of the class specified which may be used in conjunction with a ferrule to form an insulated and reinforced end portion to the armored cable where the conductors project therefrom, facilitating the mounting of the cable in connection with electrical boxes or conductors of any kind or class; and with these and other objects in view, the invention consists in a device of the class and for the purpose specified which is simple in construction, efficient in use, and which is constructed as hereinafter described and claimed.

The invention is fully disclosed in the following specification, of which the accompanying drawing forms a part, in which the separate parts of our improvement are designated by suitable reference characters in each of the views, and in which:—

Fig. 1 is a sectional view showing one form of coupling with one of our improved insulator shields arranged therein and illustrating one method of its use.

Fig. 2 is an enlarged sectional view of a part of the construction shown in Fig. 1.

Fig. 3 is an end view of the structure as seen in Fig. 2.

Fig. 4 is a view similar to Fig. 3 showing another form of coupling.

Fig. 5 is an end view of the structure shown in Fig. 4; and

Fig. 6 is a view similar to Fig. 1 showing only a part of the construction and showing another modification.

For the purpose of illustrating one use of our invention, we have shown in Fig. 1 of the drawing, one type of cable box 10, and in Figs. 1 to 5 inclusive, one form of coupling used in conjunction with boxes of any kind or class such for example as fuse boxes, switch boxes or any kind of electric fixtures, the coupling consisting of a tubular body 11, one end portion of which is externally threaded so even at 12 to receive a nut 13, the coupling having an outwardly extending flange 14 centrally threaded, and the threaded end portion having an inwardly extending flange 15.

The other end portion is in the form of a split ring or collar 16, one side wall 16a of which is covered as seen at 17 to permit it to yield forming a clamp of said ring which may be gripped about the cable by the tightening of a screw 18 which is in threaded engagement with one wing 19 of the collar 16 and passes loosely through another wing 19a. This coupling is of conventional form and is adapted to pass through one of the knock out apertures 10a of the box 10 and is secured thereto by the nut 13 and flange 14 as seen in Fig. 1 of the drawing.

In carrying our invention into effect, we employ in conjunction with the coupling, an insulator shield 20 and the brief description of this shield will apply to the shield shown in the other figures. The shield 20 is in the general form of a split tubular body, the split being indicated at 21 and the walls of the split portion at one end thereof being beveled and tapered as seen at 22 and terminate in a pointed or pronged end 23 which facilitates the placement of the shield in the armored cable as later described.

The other end portion of the shield is fashioned

lined to form two outwardly extending member ends or portions 24 and 25 between which is an annular space 26, and the inside diameter of the shield of the rear 25 is equal to the diameter of the shield proper forwardly of and adjacent to the shield 24.

In practice, the shield 20 is located in the coupling by drawing the flange 18 in the rear of the shield 20 and the shield proper through the end portion of the casing 10 as shown in Fig. 3. The portion of the shield constituting the rear part of the coupling and caused to extend forwardly away from the casing 10 by the action of the shield 24 is that the portions 24 and 25 will then be the flange 18. In Fig. 4 of the drawing, we have shown an example of the coupling of an outer flexible cable 27 in which are arranged two insulated conductors 28 and 29, and these conductors will be the casing 27 may be made in any desired manner.

In the use of an improved coupling the same may be made over the known practice of the end of the conductors by placing said end portion through the hole of the shield 20 in the rear and then placing the portion of the shield in one of the end portions of the casing 10 between the end portion of the shield proper 27 of the casing 27. This shield is forced forwardly into the casing and around the conductors 28 and 29 in a backward way to protect the conductors at the end portion 27 of the casing 27. The shield 20 being attached to the outer casing 27, the shield may be coupled with a bar, known as the line end of the bar 23 by passing the end portion of the shield through one of the openings 19 of the bar and around the forward end of the coupling in such a way that, after which the end 23 may be passed over the conductors and moved into position to securely clamp the coupling to the bar.

It is understood that in the arrangement of the coupling with the cable, the clamp ring 18 has been moved about the casing 27. In this connection, it will also be noted that clearance is provided between the flange 18 and the rearward portion 25 of the shield so as to permit relative rotary movement of the parts with respect to each other.

Instead of proceeding as above, it will also be understood that the assembled coupling including the shield may be first moved in the bar, after which the cable may be coupled therewith by passing the free end portions 28a and 29a of the conductors through the coupling and the shield 20 thereof, inserting the prong into the end portion of the casing 27 as described and then locking it.

In the other under consideration of any design and construction, the two most commonly known being shown to illustrate the general application and broad use of the invention. The coupling comprises a tubular body 20 and end portion 24 which has an internal flange 18. The shield is in all respects as the flange 18, and the other end portion of the coupling is provided with an outwardly projecting flange 25 in which is arranged an outwardly directed screw 23 intended to be moved into contact with the exterior of the casing 27 to secure the casing against movement relatively to the coupling. The bar also including extending shoulders 24 which are adapted to bear against the outer wall of the bar 23 which is indicated in dotted lines in Fig. 4.

A bar 23 is arranged on the inner wall of the bar 10. The coupling is held in position by a spring 26 mounted upon the wall of the casing 27 as shown in Fig. 4 at a point disposed opposite to the bar 23, the end 26a of the spring engaging the wall of the bar. A locking 23 is indicated in dotted lines in Fig. 4 of the drawing showing its arrangement within the casing.

In Fig. 6 of the drawing we have shown another modification wherein the shield 20 is used in connection with a flanging ferrule 27 of conventional or any desired form, the ferrule being constructed to form screw threaded portions 28 whereby the ferrule may be threaded upon the spiral contour of the casing 27 which is indicated in Fig. 6 of the drawing, the outer end of the ferrule having an internal flange 25 which is adapted to rest in the recess 26 of the shield so that the shield becomes a unit part of the ferrule and may be coupled with the cable by inserting the prong end 23 of the shield into the casing 27 and around the conductors 28 and 29. It being understood that in the rotation or threading operation of the ferrule the shield 20 may be turned with the ferrule to thread the same into the outermost end of the casing 27, after which the ferrule is free to rotate independently of or without rotation of the shield 20.

It will be apparent that the shield 20 constitutes a unit part of the ferrule 27 and this ferrule in all respects operates as a coupling member. While this structure may be used merely to finish, reinforce and insulate the outer or free end of a cable, it may also be used as a coupling means.

It will be understood that the insulator shield may be made of any suitable material preferably of a relatively stiff and springy

scribed may be made within the scope of the appended claims without departing from the spirit of our invention or sacrificing its advantages.

Having fully described our invention, what we claim as new and desire to secure by Letters Patent, is:—

1. The combination with a metallic tube having at one end an inwardly and radially arranged flange, of a split tubular insulator arranged in the bore of said tube, one end portion of the insulator having spaced outwardly and radially projecting members between which is a recess adapted to receive the flange of said tube, said members serving to prevent displacement of the insulator with respect to said tube, and the other end of the insulator being of prong formation.

2. A shield of the class described comprising a split tubular body composed of insulating material, one end portion of said body being of prong formation and the other end being substantially circular in cross sectional form and provided with longitudinally spaced outwardly and radially projecting members.

3. The combination with a coupling used in securing the end portion of armored cable in an outlet box or the like, of an insulating shield having means thereon for retaining the same against accidental displacement from the coupling so as to constitute a unit part thereof, one end portion of said shield being of prong formation, facilitating its insertion into the casing of armored cable arranged within the coupling.

4. The combination with an insulator shield comprising a split tubular body, one end portion of which is fashioned to form spaced, outwardly and radially projecting members between which is an annular recess, of a tubular metallic body, one end portion of which is provided with an inwardly extending flange adapted to seat in the recess of said shield to retain the tube against displacement from the shield, and the other end portion of the shield being pronged.

5. An insulator shield of the class described comprising a split tubular body composed of insulating material, one end portion of said body being fashioned to form spaced outwardly and radially projecting portions between which is a recess, the diameter of the recess portion of the shield being substantially similar to the diameter of the shield adjacent the innermost projecting portion, and the other end of the shield being of prong formation.

ly similar to the diameter of the shield adjacent the innermost projecting portion, and the walls of the split portion of the shield being cut away to form of the other end portion of the shield, a prong.

7. An insulator shield of the class described comprising a split tubular body composed of insulating material, one end portion of said body being fashioned to form spaced outwardly and radially projecting portions between which is a recess, the diameter of the recess portion of the shield being substantially similar to the diameter of the shield adjacent the innermost projecting portion, the walls of the split portion of the shield being cut away to form of the other end portion of the shield, a prong, and the projecting portions of the shield being semi-circular in cross sectional form.

In testimony that we claim the foregoing as our invention we have signed our names this 2nd day of April, 1920.

EDWIN J. SCHNEIDER.
MERRITT B. BRALEY.

which is an inside room 36, and the outside diameter of the shaft at the room 36 is equal to the diameter of the shaft in room 37.

[illegible]

It is understood that in the proceedings of the committee with the title, the above title, 16 has been received about the meeting of. In this connection it will also be noted that clearance is provided between the items 13 and the general matter of the child as so to permit relative entry movement of the work with respect to each other.

Instead of proceeding as above, it will also
be understood that in assembling coupling
including the shaft may be first secured to
the bar, after which the shaft may be inserted
thereinto by passing the two end portions
29a and 29c of the couplings through the
coupling and the shaft 20 thereof inserting
the prong into the end portion of the casing
27 as described, and then locking the ring 16
in position.

In Figs. 4 and 5 of the drawing, we have shown another conventional form of coupling, but at this time it will be apparent that our invention is applicable to couplings of

known being shown to illustrate the general application and broad use of the invention. This coupling comprises a tubular body 80 and a portion 81 of which has an internal flange 82 similar in all respects to the flange 14, and the other end portion of the coupling is provided with an internally projecting lug 83 in which is arranged a specially formed screw 84 adapted to be moved into contact with the wall of the casing 85 to secure the casing against movement relatively to the coupling. The lug also includes a screw mechanism 86 which are adapted to bear against the outer wall of the lug 83 which is indicated in dotted lines in Fig. 4.

A bag 20 is provided on the inner wall of the tank 10. This bag 20 holds in position by a spring 21 a piston 22 on the wall of the chamber 11. The piston 22 is adapted to move up and down in the bag 20, the wall 23 of the bag 20 being in the wall of the tank 10. A ball 24 is placed in front of the piston 22 of the bag 20, as shown in dotted lines in Fig. 4 of the drawing, during its arrangement with the piston 22.

In Fig. 4 of the drawing we have shown another embodiment wherein the shield 20 is used in connection with the ferrule 27 of conventional or any desired form, the ferrule being constructed so that when threaded portion 28 closely fits the ferrule may be threaded upon the spiral contour of the casing 27 which is also indicated in Fig. 6 of the drawing, the outer end of the ferrule having an internal flange 29 which is adapted to rest in the recess 25 of the shield so that the shield becomes a unit part of the ferrule and may be coupled with the cable by inserting the prong and coil 31 of the shield into the casing 27 and around the conductors 28 and 29, it being understood that in the rotation or throwing operation of the ferrule the shield 20 may be turned with the ferrule to thread the same into the outermost coil of the casing 27, after which the ferrule is free to rotate independently of or without rotation of the shield 20.

It will be apparent that the shield 30 constitutes a unit part of the ferrule 27 and this ferrule in all respects operates as a coupling member. While this structure may be used merely to finish, reinforce and insulate the end of a fire end of a cable, it may also be used as a coupling means.

It will be understood that the insulator shield may be made of any suitable material preferably of a relatively stiff and springy nature, and while we have shown certain methods of using the shield and have illustrated a shield of specific contour, our invention is not necessarily limited in these respects, and various changes in and modifications of the structure herein shown and de-

appeared claims without departing from the spirit of our invention or sacrificing its advantages.

Having fully described our invention, what we claim as new and desire to secure by Letters Patent, is:—

1. The combination with a metallic tube having at one end an inwardly and radially arranged flange, of a split tubular insulator arranged in the bore of said tube, one end portion of the insulator having spaced outwardly and radially projecting members between which is a recess adapted to receive the flange of said tube, said members serving to prevent displacement of the insulator with respect to said tube, and the other end of the insulator being of prong formation.

2. A shield of the class described comprising a split tubular body composed of insulating material, one end portion of said body being of prong formation and the other end being substantially circular in cross sectional form and provided with longitudinally spaced outwardly and radially projecting members.

3. The combination with a coupling used in securing the end portion of armored cable in an outlet box or the like, of an insulating shield having means thereon for retaining the same against accidental displacement from the coupling so as to constitute a unit part thereof, one end portion of said shield being of prong formation, facilitating its insertion into the casing of armored cable arranged within the coupling.

4. The combination with an insulator shield comprising a split tubular body, one end portion of which is fashioned to form spaced, outwardly and radially projecting members between which is an annular recess, of a tubular metallic body, one end portion of which is provided with an inwardly extending flange adapted to seat in the recess of said shield to retain the tube against displacement from the shield, and the other end portion of the shield being pronged.

5. An insulator shield of the class described comprising a split tubular body composed of insulating material, one end portion of said body being fashioned to form spaced outwardly and radially projecting portions between which is a recess, the diameter of the recess portion of the shield being substantially similar to the diameter of the shield adjacent the innermost projecting portion, and the other end of the shield being of prong formation.

6. An insulator shield of the class described comprising a split tubular body composed of insulating material, one end portion of said body being fashioned to form spaced outwardly and radially projecting portions between which is a recess, the diameter of the recess portion of the shield being substantial-

ly similar to the diameter of the shield adjacent the innermost projecting portion, and the walls of the split portion of the shield being cut away to form of the other end portion of the shield, a prong.

7. An insulator shield of the class described comprising a split tubular body composed of insulating material, one end portion of said body being fashioned to form spaced outwardly and radially projecting portions between which is a recess, the diameter of the recess portion of the shield being substantially similar to the diameter of the shield adjacent the innermost projecting portion, the walls of the split portion of the shield being cut away to form of the other end portion of the shield, a prong, and the projecting portions of the shield being semi-circular in cross sectional form.

In testimony that we claim the foregoing as our invention we have signed our names this 2nd day of April, 1900.

EDWIN J. SCHNEIDER.
MERRITT B. BRADT.

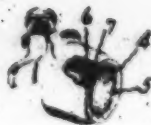
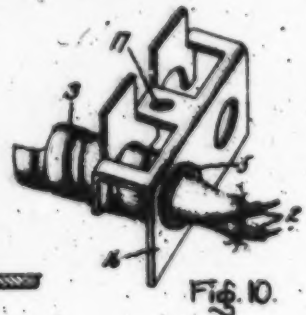
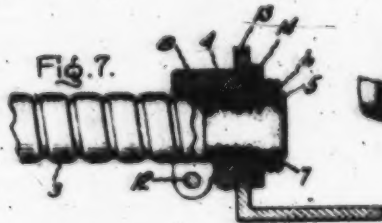
May 10, 1932.

H. G. KROEDERER

1,857,197

INSULATED CONNECTER FOR OUTLET BOXES

Filed Jan. 26, 1929



Inventor.

UNITED STATES PATENT OFFICE

EDWIN S. KROEMER, OF FAIRFIELD, CONNECTICUT, ASSIGNOR TO GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK

IMPROVED CONNECTION FOR CABLES

Application May 22, 1929. Serial No. 26,227.

My invention relates to an improved connection of elements of utility in connection with armored conductors, such as are employed in house wiring and the like and more particularly to an improved insulating, lashing and connector combination for securing armored conductors to outlet boxes and the like.

An object of my invention is to provide an arrangement of parts which will insure that the insulated wires of armored conductors are protected from the sharp end edges of the armor without the necessity for particular thought or care on the part of the workman in making the installation.

A further object of my invention is to provide a combination of insulating lashing and connector which will also protect the conductors from any sharp edges on the part of the connector, which extends into the outlet box, so that the conductor insulation will not be injured thereby.

A further object of my invention is to provide a construction which will permit connectors and insulating lashings to be readily assembled and enable the combined connector and lashing to be shipped and sold as a unit and handled by the workman as a unit when making an installation.

A further object of my invention is to provide an arrangement which when the installation is completed will enable an inspector readily to determine whether or not the installation has been properly made.

A further object of my invention is to provide a simple and rugged arrangement of parts which makes it impossible for the lashing to be removed from the connector after the armor stripped ends of the conductors are inserted into the lashing and which permits the workman to force the armored conductor in position for clamping without danger of forcing out the lashing, and which will insure that the conductors are protected from the sharp end edges of the armor when the armor has been pushed into the connector for

also advantageous for use in connection with flexible metallic conduit which is secured by connection in a similar way to outlet boxes and the like and into which conduit the conductors are drawn and the electrical connections made after the conduit system has been installed. In such an arrangement my invention protects the conductors from injury by the sharp edges on the conduit and connector and also provides a smooth uninterrupted runway for the drawn in wires.

My invention will be better understood when considered in connection with the following specification and accompanying drawings and its scope will be pointed out in the appended claims.

Referring to the drawings, Fig. 1 is a side elevation, with part broken away, of an armored conductor with the right-hand end stripped of armor; Fig. 2 is an axial section of the connector with my insulating lashing in place; Fig. 3 are sections of a junction box wall and connector retaining nut; Fig. 4 is a perspective view of the other end of the connector; Fig. 5 is an assembled view of the several parts shown in Figs. 1, 2 and 3; Fig. 6 is a side elevation of another form of armored conductor showing the sharp end edge automatically formed in the cutting of the armor to bare or strip the ends of the insulated wires; Fig. 7 is a part side elevation and part section of a flexible metallic conduit assembled in a connector provided with my insulating lashing; Fig. 8 is a perspective view with part broken away of the inner end of a different form of connector and insulating lashing; Fig. 9 is a similar view of another form of connector and insulating lashing; Fig. 10 is a view of the application of my invention with a different form of clamping means and Fig. 11 represents a modified construction of insulating lashing.

As is well known, the armor of armored conductors and the flexible metallic conduits of commerce are composed of continuous metal strips or ribbons profiled in cross section

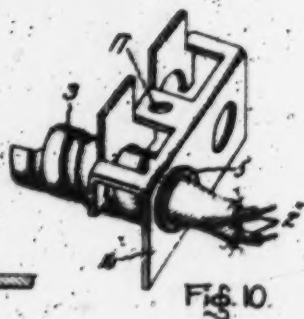
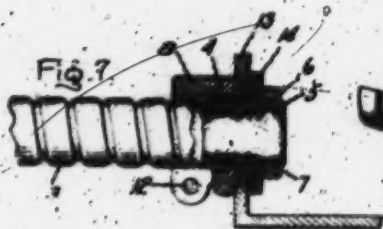
May 10, 1932

H. G. KNODERER

1,857,197

INSULATED CONNECTOR FOR OUTLET BOXES

Filed Jan. 25, 1929



Inventor.
Homer G. Knoderer,
by *Charles E. Tuller*
His Attorney.

UNITED STATES PATENT OFFICE

WILLIAM G. KROEMER, OF BAINBRIDGE, CONNECTICUT, ASSIGNOR TO GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK

INSULATED CONNECTORS FOR OUTLET BOXES

Application filed January 21, 1914. Serial No. 222,127.

My invention relates to an improved combination of elements of utility in connection with armored conductors, such as are employed in house wiring and the like and more particularly to an improved insulating bushing and connector combination for securing armored conductors to outlet boxes and the like.

An object of my invention is to provide an arrangement of parts which will insure that the insulated wires of armored conductors are protected from the sharp and edges of the armor without the necessity for particular thought or care on the part of the workman in making the installation.

A further object of my invention is to provide a combination of insulating bushing and connector which will also protect the conductors from any sharp edges on the part of the connector, which extends into the outlet box, so that the conductor insulation will not be injured thereby.

A further object of my invention is to provide a construction which will permit connectors and insulating bushings to be readily assembled and enable the combined connector and bushing to be shipped and sold as a unit and handled by the workman as a unit when making an installation.

A further object of my invention is to provide an arrangement which when the installation is completed will enable an inspector readily to determine whether or not the installation has been properly made.

A further object of my invention is to provide a simple and rugged arrangement of parts which makes it impossible for the bushing to be removed from the connector after the armor stripped ends of the conductors are inserted into the bushing and which permits the workman to force the armored conductor into position for clamping without danger of forcing out the bushing, and which will insure that the conductors are protected from the sharp and edges of the armor when the armor has been pushed into the connector far enough to permit it to be secured therein by the clamping means thereof.

While my invention is particularly useful in connection with armored conductors, it is

also advantageous for use in connection with flexible metallic conduit which is secured by connectors in a similar way to outlet boxes and the like and into which conduit the conductors are drawn and the electrical connections made after the conduit system has been installed. In such an arrangement my invention protects the conductors from injury by the sharp edges on the conduit and connector and also provides a smooth unobstructed runway for the drawn-in wires.

My invention will be better understood when considered in connection with the following specification and accompanying drawings and its scope will be pointed out in the appended claims.

Referring to the drawings, Fig. 1 is a side elevation, with part broken away, of an armored conductor with the right-hand end stripped of armor; Fig. 2 is an axial section of the connector with my insulating bushing in place; Fig. 3 are sections of a junction box wall and connector retaining nut; Fig. 4 is a perspective view of the outer end of the connector; Fig. 5 is an assembled view of the several parts shown in Figs. 1, 2 and 3; Fig. 6 is a side elevation of another form of armored conductor showing the sharp and edge automatically formed in the cutting of the armor to have or strip the ends of the insulated wires; Fig. 7 is a part side elevation and part section of a flexible metallic conduit assembled in a connector provided with my insulating bushing; Fig. 8 is a perspective view with part broken away of the inner end of a different form of connector and insulating bushing; Fig. 9 is a similar view of another form of connector and insulating bushing; Fig. 10 is a view of the application of my invention with a different form of clamping means and Fig. 11 represents a modified construction of insulating bushing.

As is well known, the armor of armored conductors and the flexible metallic conduits of commerce are composed of continuous metal strips or ribbons profiled in cross-section and coiled helically so that the edges thereof become interlocked with a certain amount of freedom to slip upon each other when the finished article is bent. It is customary in

installing armored conductors and 8. This metallic shield is cut the profiled metal strip by suitable means such as a hack saw. This usually leaves a sharp projecting end edge or corner which is cut to prevent the insulation of the conductor. Also, under special care is taken by the workman, the hack saw may cut into or through the insulation of the wires of armored conductors directly beneath the sharp and edge thereby increasing the liability of an electrical contact between the armor and the wire. After a portion of the armor has thus been removed and removed, the armored conductor is secured by suitable means such as a connector to the outlet box into which the wire project. The manipulation of these wires by the workman in making connections is likely further to injure the insulation on the wire by means of sharp edges or projections on the armor or the conductor.

In accordance with my invention I provide an improved insulating backing which projects between the wire and the armor of the armored conductor to form an insulating and protecting sleeve to protect the wire from injury by sharp edges or projections on the armor and which, between the end of the conductor which extends into the outlet box to protect the wire against injury from the connector. Referring to Figs. 1 and 2 it will be seen that the backing 4 is mounted in the connector 3. As will be more particularly set forth hereinafter, the backing is constructed so that when it has been inserted into the connector it will be securely retained in the connector and the backing and connector may be handled as a unit. After a portion of the armor of the armored cable has been removed the projecting wires are inserted through the connector and backing as above described. In Fig. 1 the projecting wires of the armored conductors are shown at 2 and the armor at 1. In order to enable the backing to be readily inserted between the wires and the armor, I prefer to use an armored conductor which is provided with a wrapping 1 which may be of paper. After the armor has been cut and a portion removed so as to have the projecting wires a portion of the paper wrapping 1 may be pulled out and the wrapping secured for a distance back into the armor sufficient to accommodate the sleeve of the backing which projects between the wires and the armor. While I at present prefer to use armored conductors with such a wrapping my invention is also applicable to other forms of armored conductors where there is a small amount of looseness or space between the conductors 2 and the armor 1 which permits the backing to be forced into place.

I prefer to make the insulating backing 4 in the form of a split tube of fiber or other suitable resilient insulating material provided at the inner or outlet box end with

two spaced shoulders, one of which is an end flange 5 and the other a head 6 between which shoulders the internal flange or contracted part 7 of the connector 3 is located when the backing is in place in the connector. When the backing is forced into the shouldered or contracted part 7 of the connector 3 the head 6 comes through the contracted part 7 and the latter is then embraced on opposite sides by the spaced shoulders of part 5 and 6 and stays thereby to hold the insulating backing definitely positioned therein with an annular clearance space 8 between the main bore 10 of the connector 3 and the outside of the main tubular portion of the backing. This clearance space 8 is open at the outer end and closed at its inner end, as shown in Fig. 2.

In order to facilitate the entrance of the split insulating backing 4 into the space between the insulated conductors 2 and the inner surface of the armor 1, the outer corners 12 thereof adjacent the split are preferably rounded off, as shown in Fig. 2, and the outer end of the backing is preferably made slightly beveled or tapered.

I preferably construct the backing so that when it is squeezed into place in the connector the longitudinal edges adjacent the split of the backing come into abutting relation with each other. This serves to resist the collapse of the backing and provides a complete insulating sleeve. It is within the scope of my invention, however, to make the slit in the backing sufficiently wide so that when it is contracted to insert it in the connector the edges come into abutting relation and when the backing comes into place its resiliency causes it to be held firmly in place. The flange 5 and the head 6 on the backing contribute to the resilient action of the backing.

When the conductors 2 have been inserted through the backing the collapse of the backing is prevented or that the workman may grasp the connector 3 in his hand and apply force to drive the sleeve into place between the armor and the wires and to drive the connector 3 over the armor 1 without danger of pulling the backing out of the connector.

The particular form of connector 3 shown in section in Figs. 2 and 3 is shown in perspective in Fig. 4. I provide such a length of backing 4 with respect to the connector 3 that when the armor 1 has been forced into the connector far enough to enable the armored conductor to be inserted into the connector by tightening the armor 1 the sleeve of the backing will have been forced between the wires and the armor to the necessary distance to protect the wires from the sharp edges of the armor. In other words when the armored conductor has been inserted into the connector far enough to enable it to be secured by the clamping means it necessarily follows that the backing is properly located. After

the connector has been clamped to the armor the threaded end of the connector 8 is entered through the hole in the outlet box wall 13, or other wall through which the wires are to be led, and this connector is secured to the wall by the nut 14 as indicated in Fig. 5.

It will be observed that the flange 5 of the bushing 4 projects over and protects the wires from injury from the edges of the connector 7. It will also be observed that the flange 5 of the bushing is in a position where it may be readily seen by looking into the outlet box. If, therefore, an inspector observes that the armor is properly clamped in the connector and observes the flange 5 of the bushing, he knows at once that the insulating bushing is in place and that the job has been properly done. This is a feature of considerable importance since if the bushing were inside of the contracted portion 7 of the connector it would be practically impossible for the inspector to determine whether or not the bushing was present without disassembling the connection. Even should the inspector disassemble a few connections in a building and find that the bushings were in place he would even then not be sure that the bushings were in place in the other connections unless he disassembled all of them. With my arrangement no disassembling at all is necessary and the inspection can be made quickly and with certainty. Moreover since the bushing may be shipped in place in the connector and handled as a unit by the wireman the wireman does not need to exercise the thought and care which would be necessary if separate bushings were used which he would have to remember to insert between the wires and the armor before securing the armor in the connector. It will be observed that the sleeve of the bushing projects within the connector and is protected by the connector so that it will not be damaged by the handling and boxing and shipment of the assembled units comprising the connectors and bushings.

Fig. 6 represents another form of armored conductor which omits the wrapping 1 of the armored conductor shown in Fig. 1. This figure also indicates at 11 the sharp corner which customarily results when the armor is cut with a hack saw as heretofore described.

While my invention is of particular utility in connection with armored conductors, it may also be advantageously used with flexible metallic conduits into which the wires are drawn after the conduit installation has been made. Fig. 7 shows such an application of my invention.

It will be apparent to those skilled in the art that my invention is not limited to any one particular type of connector. Fig. 8 illustrates another type of well known connector with my bushing inserted therein. Fig. 9 illustrates still another type of well-

known connector. Fig. 10 illustrates a modified arrangement for clamping armored conductors in an outlet box. In this case the member 16 is mounted inside the outlet box and when the screw passing through the hole 17 is forced down the member 16 is tilted and clamps the armor 3 in the box. With this type of clamp my bushing 4 may also be used and shipped with the clamping member as a unit. It will thus be seen that my improved arrangement is applicable to many different kinds and types of connectors.

While I at present prefer to use a bushing which is split throughout its length it is apparent that it is within the scope of my invention to use a bushing which is split or cut through a portion only of its length, as indicated in Fig. 11, the split portion being at the end upon which the shoulders 5 and 6 are provided. Such a bushing may be either inserted into the connector from the end opposite the restricted portion or may be inserted from the restricted end of the bushing if the bushing is suitably tapered, as indicated in Fig. 11, so that the uncut portion will pass through the restricted portion of the connector.

What I claim as new and desire to secure by Letters Patent of the United States, is:

1. The combination with an armored electrical conductor and an outlet box, of a connector provided with means for securing it to the armored conductor and to the outlet box and an insulating bushing comprising a split cylindrical sleeve located between the armor and conductors and provided with means for attaching it to said connector the parts being constructed and proportioned so that when the securing means is operative to connect the armored conductor to the connector the bushing will be located properly to protect and insulate the conductors from the armor and connector.

2. The combination with an insulator shield comprising a split tubular body, one end portion of which is fashioned to form spaced, outwardly and radially projecting members between which is an annular recess, of a tubular metallic body, one end portion of which is provided with an inwardly extending flange adapted to seat in the recess of said shield to retain the tube against displacement from the shield.

3. The combination with a tubular body having an inwardly and radially directed wall, of a shield of insulating material arranged in the bore of said body, and means on said shield adapted to be arranged at opposite sides of said wall for retaining said shield against displacement from said body.

4. In combination with an insulated electric conductor and a sheathing therefor, said conductor having an end portion projecting outwardly from an end of said sheathing, of a coupling adapted to connect said conductor

and its sheathing has electrical features, said coupling comprising a tubular body adapted to be passed over the end of said sheathing and having a substantially longitudinally extending shield member therewith adapted to project into said sheathing in surrounding and protecting relation with said insulated conductor.

10 2. The combination with a conductor having a conductive sheath, of a shield cylindrical insulating flange having means thereon for resisting the stress against axial displacement therefrom which the passage of the said conductor as it is inserted in a said part thereof, the walls of the said portion are on end of said flange being on along a plane at an angle to the longitudinal axis of said flange.

3. In combination with an insulated electric conductor and a sheathing therefor, said conductor having an end portion projecting outwardly from an end of said sheathing, of a coupling adapted to connect said conductor and its sheathing to an electrical fixture, said coupling comprising a tubular body adapted to be passed over the end of said sheathing and having a substantially longitudinally extending cylindrical shield member adapted to project into said sheathing in surrounding and protecting relation with said insulated conductor, and an attaching flange formed on said shield member and attached to said tubular body.

4. In combination with an insulated electric conductor and a sheathing therefor, said conductor having an end portion projecting outwardly from an end of said sheathing, of a coupling adapted to connect said conductor and its sheathing to an electrical fixture, said coupling comprising a tubular body adapted to be passed over the end of said sheathing and having a substantially longitudinally extending cylindrical shield member therewith, in in spaced relation from the inner walls of said tubular body, said shield member being adapted to project under said sheathing and in surrounding, protecting and supporting relation with said insulated conductor.

5. In combination with an insulated electric conductor and a sheathing therefor, said conductor having an end portion projecting outwardly from an end of said sheathing, of a coupling adapted to connect said conductor and its sheathing to an electrical fixture, said coupling comprising a tubular body adapted to be passed over the end of said sheathing and having a shield member therewith comprising a substantially cylindrical body portion adapted to surround said insulated conductor and to project under the end portion of said sheathing to protect said insulated conductor from the stress action of said end portion, said shield member having an outwardly extending annular flange fixedly attached to said tubular body, and clamping

means provided on said body and adapted to grip said sheathing to retain said coupling thereon.

6. A coupling for armored cables comprising a tubular body having a sheathing receiving aperture for receiving the end portion of an armored cable and a substantially cylindrical shield member having a body portion extending longitudinally within said aperture and concentric therewith for insertion under the said sheathing, and an attaching flange formed on said body portion and attached to said tubular body.

7. In combination with an armored cable comprising an insulated electric conductor and a sheathing therefor, a coupling comprising a tubular body having a sheathing receiving aperture for receiving the end portion of said armored cable and a substantially cylindrical shield member having a body portion extending longitudinally within said aperture and concentric therewith, and an attaching flange formed on said body portion and attached to said tubular body, said body portion having a tapered end to facilitate the insertion of said body portion under the cable sheathing.

8. In combination with an armored cable of a coupling comprising a tubular body having a sheathing receiving aperture for receiving the end portion of said armored cable and a substantially cylindrical shield member having a body portion extending longitudinally within said aperture and concentric therewith, and an attaching flange formed on said body portion and attached to said tubular body, said body portion having a tapered end to facilitate the insertion of said body portion under the cable sheathing.

In witness whereof, I have hereunto set my hand this 22d day of January, 1929.

HOMER G. KRODERER.

ATTORNEY

616

Defendants' Exhibit D.**UNITED STATES DISTRICT COURT,
SOUTHERN DISTRICT OF NEW YORK.****THE THOMAS & BETTS Co., a corporation,
and NATIONAL ELECTRIC PRODUCTS COR-
PORATION, a corporation,****Plaintiffs,****vs.****ELECTRICAL FITTINGS CORPORATION, a cor-
poration, JOSELSON SALES CORPORATION,
a corporation, and SAMUEL JOSELSON
and BELLE JOSELSON, individuals,
Defendants.**

617

**Equity No.
81/229.****U. S. Letters
Patent
Fullman
1,769,947.****PLAINTIFFS' ANSWERS TO INTERROGATORIES.**

For answer to the interrogatories propounded by the defendants in this cause, plaintiffs, by Adnah McMurtrie, Secretary of The Thomas & Betts Co., state as follows:

618

1. At one time or another, as will hereinafter more fully appear, licenses under the patent in suit were granted to each of the companies referred to in interrogatory No. 1.

In answer to interrogatories 2a, 2b, 3a and 3b, affiant states as follows:

2. The licenses granted, respectively, to the companies named in interrogatory No. 1, were each prepared in printed pamphlet form similar to that executed on February 8, 1932, by and between The Thomas & Betts Co., plaintiff-licensor, and The Sterling Manufacturing Company, licensee, of Connecticut, a printed conformed copy of which is attached hereto and made a part hereof.

Defendants' Exhibit D.

619

3. The license to Sterling Manufacturing Company was cancelled as of May 10, 1933, by a letter from The Thomas & Betts Co., to Sterling Manufacturing Company dated May 9, 1933, in form and words as follows:

May 9, 1933

Sterling Manufacturing Co.,
Stratford, Conn.

Gentlemen:

Under date of April 28, 1933, we notified you by registered mail as follows:

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"In accordance with section ten (10) paragraph (a) of your license under U. S. Letters Patent Nos. 1,184,161, 1,769,947 and 1,810,958, you are hereby notified that you have not complied with section four (4) and/or section eight (8) of said license; and we hereby now notify you that payment of royalties, including minimum quarterly royalty, must be made within ten (10) days from the date of mailing of this notice."

621

Since ten (10) days have elapsed since the sending of this notice and you have not corrected your default, we hereby notify you that your license is terminated as of May 10, 1933, in accordance with section ten (10) paragraph (a) of the license agreement.

Yours very truly,

THE THOMAS & BETTS CO.
GEORGE C. THOMAS, JR.
General Manager

GCTJr/C

4. The license granted to the Appleton Electric Company, a corporation of Illinois, having its principal place of business at Chicago, Illinois, was executed March 18, 1932, by The Thomas & Betts Co., plaintiff-licensor, and Appleton Electric Co. licensee, and is, in every respect, identically the same as the printed copy of the Sterling license, attached hereto. This Appleton license is still in force.

623

5. The license granted to the Steel City Electric Co., a corporation of Pennsylvania, having its principal place of business at Pittsburgh, Pennsylvania, was executed January 26, 1932, by The Thomas & Betts Co., plaintiff-licensor, and Steel City Electric Co., licensee, and is, in every respect, identically the same as the printed copy of the Sterling license, attached hereto. This Steel City license is still in force.

On April 18, 1932, The Thomas & Betts Co. wrote Steel City Electric Co. in form and words as follows:

April 18, 1932

Steel City Electric Co.,
1207 Columbus Ave.,
Pittsburgh, Pa.

624

Attention: Mr. J. R. Richards, Sales Manager

Gentlemen:

Pursuant to license under connector patents granted by us to you on January 26, 1932, we consent, subject to withdrawal on written notice, that you may have your connectors manufactured by The Sterling Manufacturing Co., Stratford, Conn.

Yours very truly,

THE THOMAS & BETTS CO.

A. McMURTRIE

Secretary

AMMc/C

Defendants' Exhibit D.

625

On May 12, 1933, The Thomas & Betts Co. wrote Steel City Electric Co. in form and words as follows:

May 12, 1933

Mr. J. R. Richards,
Steel City Electric Co.,
1207 Columbus Ave.,
Pittsburgh, Pa.

Dear Mr. Richards:

Under date of April 18, 1932, we wrote you as follows:

626

"Pursuant to license under connector patents granted by us to you on January 26, 1932, we consent, subject to withdrawal on written notice, that you may have your connectors manufactured by Sterling Manufacturing Co., Stratford, Conn."

We hereby withdraw our consent to your having your connectors manufactured by Sterling Manufacturing Co., Stratford, Conn., owing to the fact that we have canceled the license of the Sterling Manufacturing Co.

627

Yours very truly,

THE THOMAS & BETTS CO.
GEORGE C. THOMAS, JR.
General Manager.

GCTJr/C

6. The license granted to Conduit Fittings Corporation, a corporation of Illinois, having its principal place of business at Chicago, Illinois, was executed February 1, 1935, by The Thomas & Betts Co., plaintiff-licensor, and Conduit Fittings Corporation, licensee, and is, in every respect, identically the same as the printed copy of the Sterling license, attached hereto, except for the follow-

ATTORNEY

ing amendments, all of which were made therein prior to the execution thereof, to-wit:

Page 5, lines 18 and 19, the date "February 1, 1935," was inserted.

Page 7, paragraph (a) line 5, "ten (10)" was changed to —sixty (60)—.

Page 8, paragraph (c) line 2, the words "either the licensor or" were cancelled.

Page 9, lines 7 to 12, the sentence "In the event of termination . . . an infringement thereof" was cancelled.

629 This Conduit Fittings license is still in force.

7. The license granted to Chicago Steel Tank Co., a corporation of Illinois, having its principal place of business at Chicago, Illinois, was executed January 26, 1933, by The Thomas & Betts Co., plaintiff-licensor, and Chicago Steel Tank Co., licensee, and is in every respect identically the same as the printed copy of the Sterling license, attached hereto.

630 The license of Chicago Steel Tank Co. was cancelled as of May 10, 1933, by a letter from The Thomas & Betts Co. to Chicago Steel Tank Co. dated May 9, 1933, in form and words as follows:

May 9, 1933

Chicago Steel Tank Co.,
640 W. 66th St.,
Chicago, Ill.,

Gentlemen:

Under date of April 28, 1933, we notified you by registered mail as follows:

"In accordance with section ten (10) paragraph (a) of your license under U. S. Letters Patent Nos. 1,184,161, 1,769,947 and 1,810,958, you are hereby

Defendants' Exhibit D.

631

notified that you have not complied with section four (4) and/or section eight (8) of said license; and we hereby now notify you that payment of royalties, including minimum quarterly royalty, must be made within ten (10) days from the date of mailing of this notice."

Since ten (10) days have elapsed since the sending of this notice and you have not corrected your default, we hereby notify you that your license is terminated as of May 10, 1933, in accordance with section ten (10) paragraph (a) of the license agreement.

632

Yours very truly,

THE THOMAS & BETTS CO.
GEORGE C. THOMAS, JR.
General Manager.

GCTJr/C

8. Further affiant sayeth not.

THE THOMAS & BETTS CO.
By (sgd.) ADNAH McMURTRIE,
ADNAH McMURTRIE,
Secretary.

633

County of Union, }
State of New Jersey } ss.

On this 13th day of April, 1936, before me personally appeared Adnah McMurtie of The Thomas & Betts Co., known to me, and who signed the foregoing answers to interrogatories in my presence and swore that the answers were true to the best of his knowledge and belief.

(sgd.) FRED W. VOLL, JR.,
Notary Public.

Seal)

ATTORNEY

634

Defendants' Exhibit D.

Copy

Form F 26999-1-32-2C

THE THOMAS & BETTS Co.

Licensor

with

635

THE STERLING MFG. Co.

Licensee

LICENSE FOR CABLE CONNECTORS

U. S. Letters Patent No. 1,184,161—May 23, 1916

U. S. Letters Patent No. 1,769,947—July 8, 1930

U. S. Letters Patent No. 1,810,958—June 23, 1931

Cancelled May 10, 1933

636

THIS AGREEMENT, made in the City of Elizabeth and State of New Jersey by and between THE THOMAS & BETTS Co., a corporation duly organized and existing under the laws of the State of New Jersey and having its place of business in the City of Elizabeth and State of New Jersey, hereinafter called the Licensor, and THE STERLING MFG. Co., a corporation duly organized and existing under the laws of the State of Connecticut, and having its principal place of business at Stratford, State of Conn., hereinafter called the Licensee.

WITNESSETH, that

WHEREAS, the Licensor owns or controls Letters Patent of the United States No. 1,184,161 for Connectors for Electrical Conduit granted to Hobart D. Betts, May 23, 1916 and No. 1,810,958 for Armored Cable Connector Fitting granted to J. M. G. Fullman, June 23, 1931 and No. 1,769,947 for Connector for Electrical Conduits granted to J. M. G. Fullman, July 8, 1930, and

WHEREAS, the Licensee desires to secure, and the Licensor desires to grant, a license under said patent, limited as hereinafter provided;

638

Now, THEREFORE, for and in consideration of the premises, and further in consideration of the agreements of the respective parties herein set forth, the Licensor and the Licensee have agreed, and ~~do hereby~~ agree as follows:

1. The Licensor hereby grants and agrees to grant to the Licensee a license to manufacture and sell connectors embodying the improvements and inventions hereinafter referred to as connectors covered by the above identified Letters Patent throughout the United States, its territories, possessions and dependencies, and to sell such Connectors manufactured by it within the United States for export except that no sales shall be made for export to the Dominion of Canada or Colony of Newfoundland.

639

2. The Licensee hereby acknowledges the validity of Letters Patent No. 1,184,161—1,810,958 and 1,769,947 and agrees that it will not contest or aid others in contesting the validity thereof.

3. This license is personal to the Licensee, non-exclusive and indivisible, and non-transferable by the Licensee either by operation of law or otherwise, without the written consent of the Licensor, and should the Licensee

ATTORNEY

change its name, consolidate with any other company, or abandon or sell or assign its business relating to such Connectors, or be adjudged a bankrupt, or go into liquidation or dissolution, or should a receiver of the business of the Licensee be appointed and not be discharged within ninety (90) days from the date of his appointment, then, unless the Licensor shall otherwise specifically agree in writing, the license hereby granted shall automatically terminate and be of no further effect, as of the date of such change of name, consolidation, abandonment, sale, 641 assignment, bankruptcy, liquidation or dissolution, or, in case of receivership, upon the expiration of said ninety (90) day period.

4. The Licensee covenants and agrees to pay to the Licensor, or to the order of the Licensor five per cent. (5%) of all sales of such Connectors made hereunder, calculated on the basis of net selling prices of complete connectors to the customers of the Licensee. Such payment of royalties shall be made by the Licensee to the Licensor on or before the twentieth day of the next succeeding calendar month after each quarter during the continuance of this 642 agreement. This quarterly payment is to include the royalty on all sales, and goods, for the purpose of determining royalty due hereunder, shall be considered to be sold when billed out, or if not billed out, when delivered, or when paid for if paid for before delivery. Each quarterly payment is to be accompanied by a verified statement from the Licensee to the Licensor setting forth the number of pieces of each size and type of Connectors sold during the preceding quarter and the net selling prices thereof.

5. The Licensee agrees that it will offer for sale and sell the Connectors covered by this license only at such

Defendants' Exhibit D.

643

minimum prices and on such terms and conditions and in such manner, whether on consignment or not and whether directly or through agents, or both, and if through agents, or both, only pursuant to such form of agents' agreement, as may from time to time be fixed, adopted and followed by the Licensor. The Licensor shall send to the Licensee by registered mail a net price sheet for Connectors, showing such net selling prices, terms, conditions and manner of sale and stating the date on which such prices, terms and conditions and manner of sale shall become effective. After that date the Licensor and Licensee shall not offer for sale or sell Connectors at lower prices and/or upon terms or conditions or in a manner other than those so fixed by the price sheet. Whenever a change is made by the Licensor in the selling prices or terms or conditions of the price sheet, or in the manner of selling, the Licensor shall send to the Licensee by registered mail or by telegraph notice of such changes, stating the date when such changes shall become effective. After the date so fixed the Licensor and Licensee shall not offer for sale or sell Connectors at lower prices and/or upon terms or conditions, or in a manner or under a form of agreement with agents, which vary in any manner from those so fixed.

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6. The Licensor and the Licensee further covenant and agree that neither of them will directly or indirectly grant any rebates, split any commissions, and or give any secret refunds, concessions, or inducements of any kind with respect to Connectors or other articles which would have the effect of reducing the selling prices, changing the rates of settlement or changing or increasing the discounts or changing the terms or conditions of sale, or change the manner of selling, from time to time fixed by the Licensor. The Licensor and Licensee also agree that

they will not grant long term credits, give extended datings, allow cash settlement discounts on notes or trade acceptances from purchasers or otherwise.

647 7. The Licensor may at any time or times at its option send by registered mail to the Licensee a list or lists of approved purchasers of Connectors and stating the date on which such list or lists shall be deemed to take effect. The Licensor may thereafter from time to time add or remove names from such list of approved purchasers, and in any of such events the Licensor shall notify the Licensee by registered mail of such additions, or removals, stating the date when same shall take effect. The Licensor and Licensee covenant and agree that they will offer for sale or sell Connectors only to persons whose names shall at the time appear on said list or lists and to such persons only in accordance with the preceding two paragraphs. The Licensor may at any time or times and from time to time cancel and/or withdraw said lists in whole or in part by sending by registered mail notice of such whole or partial cancellation, and/or withdrawal to the Licensee. Subsequent to any such total or partial withdrawal and/or cancellation the Licensor may from time to time and at any time or times reinstate said lists in whole or in part.

648

8. The Licensee hereby covenants and agrees to pay a minimum royalty of One Hundred and Fifty (\$150.00) Dollars for each calendar quarter, and if the total sum of royalty for any quarter shall not amount to One Hundred and Fifty (\$150.00) Dollars when computed in accordance herewith, said Licensee shall pay to the Licensor, in addition to the computed payments for such quarter, the difference between the total amount of royalties shown to be due by the quarterly statement and One

Hundred and Fifty (\$150.00) Dollars. This computation shall start with the First day of March, 1932.

9. It is the essence of this license that Connectors manufactured and/or sold hereunder shall be manufactured by the Licensor or by the Licensee and also at the option of, and if so authorized by the Licensor in writing, by others under and in compliance with the terms of a license from the Licensor and shall as to size, quality, workmanship, material, tagging, marking, labeling and in all other respects comply with the standards, requirements and specifications hereinafter referred to. The Licensee covenants and agrees that all Connectors manufactured and/or sold by it under this license shall in all respects meet and comply with the requirements, standards and specifications from time to time established and followed by the Licensor and from time to time sent to the Licensee by the Licensor by registered mail and that all sales made by the Licensee, its employees, agents and representatives shall be billed directly from the principal place of business of the Licensee. The Licensee agrees to keep, at its principal place of business, accurate records, in form satisfactory to the Licensor, of its manufacture, shipment and sale of all Connectors made by it, which records shall show the specifications followed in such manufacture, the total of each separate type and size manufactured and/or sold, the selling prices thereof, the terms and conditions of sale thereof and the payments therefor. The Licensor may appoint a Technical Committee which may consist of one or more persons, any or all of whom may or may not be employed by the Licensor. The records of the Licensee above referred to, which shall be sufficient to permit of the full examination of all transactions in Connectors from the original order to and including final delivery and payment including all expenses

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of sale, including any and all books of account and other books of the Licensee required by the Technical Committee and/or any member or members thereof relating to Connectors, be open to inspection and the making of copies and/or extracts therefrom at all reasonable times by the above mentioned Technical Committee and/or any member or members thereof and/or by a certified public accountant approved by the Licensor. The Technical Committee and/or any member or members thereof shall at all reasonable times be permitted by the Licensee to have access to the stock room and/or other places of storage of the Licensee for the purpose of examining and inspecting all Connectors manufactured by the Licensee hereunder, and shall have the right to take samples thereof, in such amount as it sees fit, upon payment therefor in cash at the current price thereof. Objections, if any, of the Licensee to having its books and records examined and/or its stock or storage rooms visited by employees of the Licensor shall not apply to or be valid as to any member or members of the Technical Committee, or any accountant not employed by the Licensor except in connection with the Technical Committee hereunder or similar technical committees.

10. This license may be terminated and cancelled by any of the following methods which are independent and separate:

a. If the Licensee shall fail to keep, or perform any of its covenants or agreements in any paragraph of this license contained, then the Licensor may notify the Licensee thereof by registered mail or telegraph and if at the end of ten (10) days from the sending of such notice the Licensee has not corrected its default or breach to the satisfaction of the

Licensors, then the Licensor shall have the right to terminate the license hereby granted by sending notice by registered mail or telegraph to the Licensee setting forth therein the date of termination of the license, which may be any date subsequent to the sending of such notice and the Licensee agrees that the license shall end and be considered terminated as of the date so fixed.

b. If the Technical Committee shall report to the Licensor that the Licensee has failed to keep or perform any of its agreements contained in paragraphs numbered 6, 7, 8 and 10 hereof, this license may be forthwith terminated by the Licensor upon not less than thirty (30) days' notice sent to the Licensee by registered mail or telegraph setting forth therein the date of termination of the license and the Licensee agrees that the license shall end and be considered terminated as of the date set forth in such notice.

c. This license may also be cancelled and terminated by either the Licensor or the Licensee on not less than sixty days' notice sent by registered mail or telegraph to the other party hereto setting forth therein the date of termination of the license and the Licensor and Licensee agree that the license shall end and be considered terminated as of the date set forth in such notice.

If within sixty days after cancellation or termination of this license under the foregoing provision, the Licensee shall apply for a new license the Licensor shall accept such application. It is understood, however, that upon the issuance of such renewal license the Licensee shall pay to the Licensor the sum of One Thousand (\$1,000.) Dollars.

MICROCARD

TRADE MARK 

22



MICROCARD[®]
EDITIONS, INC.

PUBLISHER OF ORIGINAL AND REPRINT MATERIALS ON MICROCARD AND MICROFICHES
901 TWENTY-SIXTH STREET, N.W., WASHINGTON, D.C. 20037, PHONE (202) 333-6393

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11. Any failure of the Licensor to terminate this license, after learning of a breach of any of the provisions hereof by the Licensee, shall not be deemed to constitute laches or create an estoppel on the part of the Licensor and shall not constitute a waiver of any rights of the Licensor hereunder, and any waiver by the Licensor of any breach of the provisions hereof by the Licensee, every such waiver being hereby required to be in writing, shall not be or be considered a precedent or binding upon the Licensor as to any other prior or subsequent breaches, nor shall the acceptance of royalty payments after breach or notice of termination preclude the exercise of any right of the Licensor hereunder. The termination of this agreement, either by cancellation or otherwise, shall not release the Licensee of any obligations accrued hereunder to the date such termination becomes effective, either for payment of royalties or otherwise. In the event of any termination of this license, the Licensee shall not be estopped by the execution of this agreement, or by any act done hereunder, to contest the validity of the aforesaid Letters Patent, or to deny that any of its acts constitute an infringement thereof.

12. Except as herein provided, this agreement shall continue to the full end of the term of United States Letters Patent, Nos. 1,184,161, 1,810,958 and 1,769,947 or any one of them which shall last expire; provided, however, that if said patents or any one of them or any provision of this agreement shall be declared invalid by a court of last resort, or by any court from the decision of which an appeal is not taken within the time provided by law, then and in such event, this agreement shall be deemed to have been determined as to the portion thereof which relates to the patent or the provision of this agreement invalidated by such judicial decision but the agreement

shall in all other respects remain in force. The Licensor may by notice in writing extend this license to include other patents and/or applications for patents relating to Connectors in which event the Licensee agrees to be bound in all respects with regard thereto by this license, but in the absence of such written notice this license shall not apply to or be deemed to include any other patents or applications for patents.

IN WITNESS WHEREOF, the parties hereto have caused their respective seals to be affixed and these presents to be signed, by their respective officers thereunto duly authorized, this 8th day of February, 1932.

662

THE THOMAS & BETTS CO.

(signed) By GEORGE C. THOMAS, JR.

Attest:

(signed) ADAM McMURTRIE
Sec'y

Seal of
The Thomas & Betts Co.

663

THE STERLING MFG. CO.

By W. E. ECCLES,

Pres.

Attest:

(signed) CHARLES D. WATERHOUSE,
Sec'y

Seal of
The Sterling Mfg. Co.

Oct. 9, 1928.

1,687,013

O. A. FREDERICKSON

ARMORED ELECTRIC CABLE

Filed Dec. 7, 1927

2 Sheets—Sheet 1

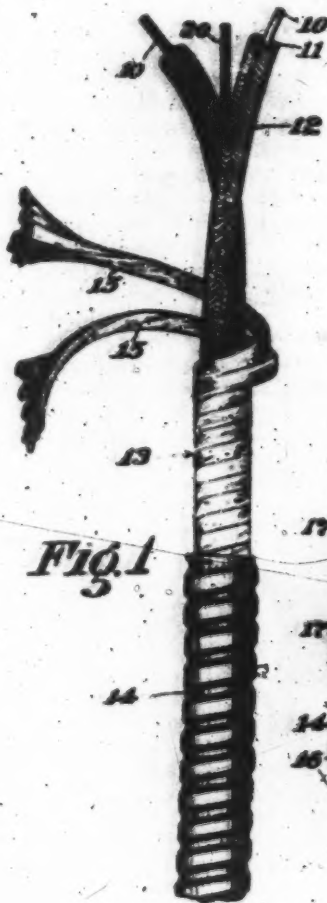


Fig. 1

Fig. 3

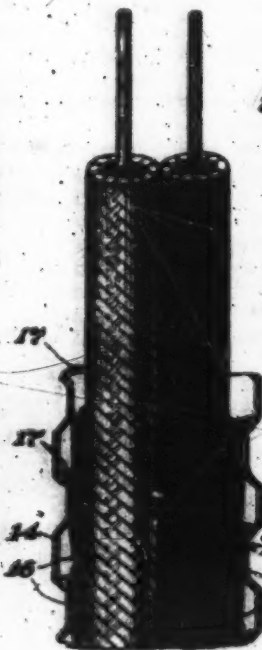


Fig. 2

14

INVENTOR
O. A. Frederickson
 BY *H. G. Adams*
 ATTORNEY

Oct. 9, 1928.

O. A. FREDERICKSON
ARMORED ELECTRIC CABLE
Filed Dec. 7, 1927

1,687,013

2 Sheets-Sheet 2

Fig. 4



Fig. 5

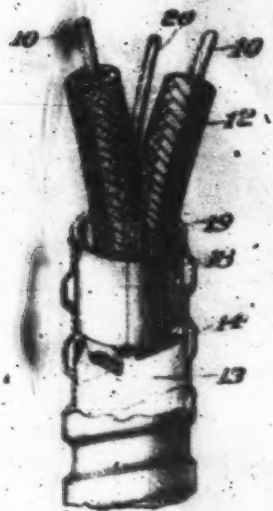


Fig. 6

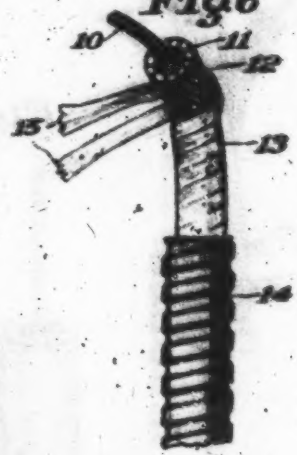
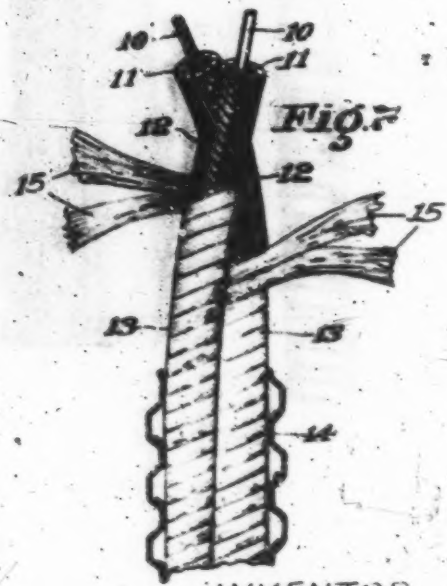


Fig. 7



INVENTOR
O. A. Frederickson
BY *W. H. K. Hays*
ATTORNEY

UNITED STATES PATENT OFFICE.

OTTO A. FRANKENBERG, OF WETHERFIELD, CONNECTICUT, ASSIGNOR TO NATIONAL ELECTRIC PRODUCTS CORPORATION, OF PITTSBURGH, PENNSYLVANIA, A CORPORATION OF DELAWARE.

ARMORED ELECTRIC CABLE.

Application filed December 7, 1917. Serial No. 508,308.

This invention relates to improvements in the construction of electric conductors having a metallic outer sheath or jacket, commonly known as armored cables or conductors. Cables of this general character ordinarily consist of two or more insulated conductors which are enclosed in an interlocked covering of insulated material, such as braided or woven fabric, and about which the spirally wound metallic jacket or sheath is placed, but such armored cables are open to many serious objections.

In the installation of such armored cables as heretofore made the outer metallic jacket or sheath is cut off some distance from the end of the enclosed conductors, in order to make attachments of the conductors to electric fixtures, and where the conductor or conductors have as heretofore been covered by interlocked strands, such for instance as woven or braided fabric, it has been further necessary after cutting the metallic sheath, to run a sharp instrument longitudinally of the exposed portions of the conductors to the end of the metallic sheath to sever the interlocked material longitudinally, and then cut the interlocked material transversely. These cutting operations are likely to injure the insulation upon the conductor wires, thus increasing the danger of short circuits. It has likewise been customary in cutting the metallic sheath to cut it transversely about the conductors with a sharp instrument which itself is likely to again injure the insulation, and in any event, the cut end portion of the metallic sheath will present burrs or sharp edges which are especially liable to penetrate or cut into the insulation, and thereby form short circuit.

In attempts to remedy this objectionable condition in the use of metallic armored cables, it has been customary heretofore to place an exterior metal sleeve or ferrule about the end of the metallic sheath. Such exterior ferrules or sleeves, however, are impractical because the metallic sheaths themselves vary in size and spirally, and unless the ferrule or sleeve was properly connected to the threaded or spiral portion of the outer sheath it was liable to be displaced, with the result that defective electrical or mechanical connection resulted. This defective condition has been the cause of much trouble and annoyance, but in addition thereto the exterior ferrule or sleeve as heretofore applied neces-

sarily increased the diameter of the armored cable or sheath, so that the increased diameter due to the ferrule or sleeve prevents the enlarged end of the armored cable from entering the usual electrical fittings on the market, and either special fittings with proper openings had to be provided, or, as was more usually the case, they were dispensed with altogether.

An important feature of the present invention, therefore, consists of an insulated conductor or conductors which is, or are, wound with stripped material of an insulating fibrous nature, and associated with the end of the cut metallic sheath or armor, is a sleeve or ferrule which is interposed between the insulated conductor or conductors and the interior of the metallic sheath, whereby all cutting action by the sharp edges or burrs, formed in serving the metallic sheath or armor is avoided.

Where the insulating fibrous material is laid spirally about the conductor or conductors, it is readily unwound from the exposed portion or ends of the conductors when the metallic sheath has been cut, and such removal is readily accomplished by an unwinding action which may be extended down into the metallic sheath itself, thereby providing sufficient space for the ready insertion of the interior bushing or sleeve, as hereinbefore referred to. By this construction it will be evident at once that the sharp edges and burrs at the end of the cut off armored or metallic sheath are prevented from injuring the insulation on the conductor or conductors.

In the preferred form of the invention in the respects above noted the bushing is formed of insulating material such as fibre, bakelite or the like, so that even should injury occur to the insulation of the conductor or conductors, the bushing will itself insulate the conductors from the metallic outer sheath.

Another important feature of the present invention consists in forming the bushing as a split tubular structure which normally has its adjacent longitudinally split edges in separated relation, so that the bushing may be applied about the conductor or conductors at a point adjacent the end of the cut off metallic armor or sheath and by pinching it or contacting its diameter it may be readily inserted between the inner surface of the metallic armor or sheath and the insulated con-

ductor or conductors. Thus the objections heretofore existing in the old form of metallic armored or sheathed cables or conductors are readily overcome, short circuits absolutely prevented between the metallic sheath and enclosed conductor or conductors, and the diameter of the armored cable itself is not increased, so that it lends itself at once to direct application to the electrical fittings now in general use.

The use of a spirally wound insulating covering about the covered conductors, in place of the braided or woven outer coverings proposed heretofore, has a further advantage in that the spirally wound fibrous strip may be formed of material that is sufficiently compressible to constitute a cushion that fits snugly within the armored sheath or jacket, to thereby prevent sliding movement of the covered conductors within the armored sheath, whereby chafing of the covering against the inner walls of the metal sheath is prevented. Heretofore the insulating covering lying next to the armored sheath has been braided or woven, but it is difficult to prevent such braided or woven covering from sliding back and forth within the armored outer sheath with a chafing action; and to prevent this it has been customary to apply a coating of paraffin to the outer covering to fill or swell the same, but since paraffin possesses lubricating properties it will not entirely prevent the sliding movement of the covered conductors within the metal sheath. As above pointed out, relative movement between the conductors and armored sheath is readily prevented, in accordance with the present invention, by forming the outer insulating covering of a cushioning material so that the coils of the armored sheath may sink sufficiently into the cushioning material to lock the parts against relative movement.

The use of an outer covering which is formed of a soft or compressible material wound spirally about the covered conductors has a further advantage in that if the adjacent coils of the insulating material are wound close together so that their edges overlap, the overlapping edges will sink into each other to form a smooth tight joint between the adjacent coils. As a result of these tight joints it will be practically impossible for the metal slivers which are sometimes formed upon the edges of the spirally wound strips of the armor to work through this outer covering and short circuit the conductors, whereas when the outer covering is woven or braided as heretofore, it is not difficult for these metal slivers to enter the interstices between the interbraided or interwoven strands.

The above and other features of the inven-

In the drawings:—

Fig. 1 is a side elevation of an armored cable constructed in accordance with the present invention, the covered conductors being shown as extending beyond the end of the armor;

Fig. 2 is an enlarged view similar to Fig. 1, part of the armor being shown in section; Fig. 3 is an enlarged sectional view through the armored cable;

Fig. 4 is a perspective view of an expansion bushing to be described;

Fig. 5 is a perspective view showing the bushing mounted inside of the armor of the cable;

Fig. 6 is a side elevation of a modified construction showing an armored cable having a single insulated conductor; and

Fig. 7 is a side elevation of a further modified armored cable construction.

In the drawings the armored cable is shown as provided with either one or two insulated electric conductors but it will be understood that the features of the present invention may also be employed in connection with armored cables having more than two insulated conductors.

In Figs. 1, 2, 3 and 5 of the drawings each electric conductor 10 is shown as having the usual form of insulation consisting of a rubber jacket 11 over which is provided a covering of braid 12, and about the two covered conductors thus formed is wound a novel protecting covering 13 of fibrous material that serves to unite the conductors and protect them from the outer metallic jacket or sheath 14.

The present invention is not concerned with the particular construction of the outer metallic jacket 14, and this jacket may be formed of a spirally wound metal strip in any well known or preferred manner.

While the spirally wound insulating covering 13 may be formed of practically any fibrous material that is strong and durable, it is found that excellent results are secured by forming the covering 13 of strips of thin flexible paper 15 that is crumpled transversely into a soft rounded strand as shown. The paper strips 15 may be untwisted, or if desired, they may have a slight twist, but it is preferable that the twist be not great enough to render the paper hard and non-compressible. The covering 13 is shown as formed of two spirally wound strips 15, but a greater or smaller number of strips may be employed.

The spiral coils of the strips 15 are preferably laid sufficiently close together to cause their adjacent edges to overlap as at 16, and since the strips forming the coils are

slivers such as 17 that are accidentally formed upon the edges of the metal strip, to enter the tightly closed joint 16.

The strip of metal forming the armored jacket 14 is preferably wound sufficiently tight about the covering 13 to cause the metal coils to sink slightly into the surface of the cushioning material 13 to thereby lock the covered conductors against sliding movement within the armored jacket.

As above stated an important feature of the present invention resides in means for preventing the covering for the conductors 10 from being cut or chafed by the sharp edges which are necessarily formed at the end of the armored jacket 14 when the jacket is cut transversely. This is accomplished by providing a bushing or sleeve 18 which is preferably cut longitudinally as shown in Fig. 4 so that the sleeve may be opened out sufficiently to permit its insertion laterally over the covered conductors. The bushing may be made of spring metal if desired, but is preferably made of insulating material, and may be compressed between the fingers, as will be apparent from Fig. 4 to facilitate the insertion of the bushing within the end of the armor 14.

Before the bushing 18 may be inserted in the armored sheath it is necessary to provide a clearance space for the bushing, but this is readily done by drawing several coils of the fibrous material 15 out of the space between the covered conductors 12 and metal sheath 14 as will be apparent from Fig. 2, whereupon the expansion bushing may be readily inserted to its final position in which it is shown in Fig. 5. The expanding action of the bushing will hold it in place in the armored sheath, and the bushing is preferably provided with a flange 19 at its outer end that will abut against the end of the armored sheath.

The bushing 18 is not only easy to insert in the end of the armored sheath, but it provides a smooth surface for the covered conductors and eliminates any chance of the insulation upon the conductors being injured by the edges at the end of the armored sheath. Furthermore, it constitutes a reinforcing sleeve or support for the inner wall of the metal sheath. This will facilitate the securing of a clamp or other form of attachment tightly about the outer end of the reinforced armor preparatory to securing the armor to the casing of an outlet box.

The insulating covering 12 and 13 may be treated with any of the usual moisture proofing compounds, and if desired a ground wire 20 may be laid alongside the covered conductors 12 so that it is enclosed and protected by the covering 13. This ground wire is highly desirable as it forms a dependable ground between the outlet boxes to which the conductors may be connected, but such

ground wire is not claimed herein as it has been made the subject matter of a separate application filed by me.

The modified construction shown in Fig. 6 differs from the construction shown in Figs. 1, 2, 3 and 5 only in that in Fig. 6 the protecting covering 13 is wound about a single insulated conductor 12, and the metallic jacket 14 is placed about this single conductor, whereas in Figs. 1, 2, 3 and 5 the covering 13 surrounds and unites two insulated conductors which are protected by the armor 14. In the modified construction of Fig. 7 each insulated conductor is provided with a protecting covering 13 which may be removed without disturbing the covering 13 upon the other conductor, and these two conductors are enclosed in the metallic jacket 14. In each of the constructions shown and described several coils of the protecting material 15 may be pulled out from the interior of the armored jacket 14 to form a clearance space for the bushing 18.

In the armored cables employed heretofore it has been customary to provide a braided or woven jacket over the two or more covered insulated conductors and then apply the armored covering directly over the braided or woven jacket in relatively snug engagement with the bracket. There is therefore not sufficient room between the metal covering and outer jacket of the armored cables constructed heretofore to receive a bushing 18, and it is practically impossible to remove a sufficient amount of the braided or woven jacket from the interior of the armored covering to form a sufficient clearance space to receive the bushing 18.

This difficulty is entirely overcome by employing the construction of the present invention, since the spirally wound covering 13 may be easily stripped off of the conductors 12 to produce the desired clearance for a bushing 18. The use of a spirally wound covering 13 has the further advantage in that it is much easier for the wireman to remove than braid, since he need simply unwind the former while he must cut the latter. Furthermore, the use of a spirally wound outer covering which the wireman can readily unwind without any cutting operation avoids injury to the underlying insulation, whereas when a braided outer covering is used the underlying insulation is frequently injured by the wireman as he cuts away the outer braided covering, and any injury to the underlying insulation necessarily increases the fire hazard.

What is claimed is:

1. An armored electric conductor comprising, an insulated wire, a protecting covering of insulating material surrounding the insulated wire, a metallic sheath or jacket enclosing the protecting covering and insulated wire, and a bushing interposed between the in-

ic armored or sheathed cables or conductors are readily overcome, short circuits absolutely prevented between the metallic sheath and enclosed conductor or conductors, and the diameter of the armored cable itself is not increased, so that it lends itself at once to direct application to the electrical fittings now in general use.

The use of a spirally wound insulating covering about the covered conductors, in place of the braided or woven outer coverings proposed heretofore, has a further advantage in that the spirally wound fibrous strip may be formed of material that is sufficiently compressible to constitute a cushion that fits snugly within the armored sheath or jacket, so thereby prevent sliding movement of the covered conductors within the armored sheath, whereby chafing of the covering against the inner walls of the metal sheath is prevented. Heretofore the insulating covering lying next to the armored sheath has been braided or woven, but it is difficult to prevent such braided or woven covering from sliding back and forth within the armored outer sheath with a chafing action; and to prevent this it has been customary to apply a coating of paraffin to the outer covering to fill or swell the same, but since paraffin possesses lubricating properties it will not entirely prevent the sliding movement of the covered conductors within the metal sheath. As above pointed out relative movement between the conductors and armored sheath is readily prevented, in accordance with the present invention, by forming the outer insulating covering of a cushioning material so that the coils of the armored sheath may sink sufficiently into the cushioning material to lock the parts against relative movement.

The use of an outer covering which is formed of a soft or compressible material wound spirally about the covered conductors has a further advantage in that if the adjacent coils of the insulating material are wound close together so that their edges overlap, the overlapping edges will sink into each other to form a smooth tight joint between the adjacent coils. As a result of these tight joints it will be practically impossible for the metal slivers which are sometimes formed upon the edges of the spirally wound strips of the armor to work through this outer covering and short circuit the conductors, whereas when the outer covering is woven or braided as heretofore, it is not difficult for these metal slivers to enter the interstices between the interbraided or interwoven strands.

The above and other features of the invention will be best understood from the following description when read in connection with the accompanying drawings illustrating good practical forms of the invention.

Fig. 1 is a side elevation of an armored cable constructed in accordance with the present invention, the covered conductors being shown as extending beyond the end of the armor;

Fig. 2 is an enlarged view similar to Fig. 1, part of the armor being shown in section;

Fig. 3 is an enlarged sectional view through the armored cable;

Fig. 4 is a perspective view of an expansion bushing to be described;

Fig. 5 is a perspective view showing the bushing mounted inside of the armor of the cable;

Fig. 6 is a side elevation of a modified construction showing an armored cable having a single insulated conductor; and

Fig. 7 is a side elevation of a further modified armored cable construction.

In the drawings the armored cable is shown as provided with either one or two insulated electric conductors but it will be understood that the features of the present invention may also be employed in connection with armored cables having more than two insulated conductors.

In Figs. 1, 2, 3 and 5 of the drawings each electric conductor 10 is shown as having the usual form of insulation consisting of a rubber jacket 11 over which is provided a covering of braid 12, and about the two covered conductors thus formed is wound a novel protecting covering 13 of fibrous material that serves to unite the conductors and protect them from the outer metallic jacket or sheath 14.

The present invention is not concerned with the particular construction of the outer metallic jacket 14, and this jacket may be formed of a spirally wound metal strip in any well known or preferred manner.

While the spirally wound insulating covering 13 may be formed of practically any fibrous material that is strong and durable, it is found that excellent results are secured by forming the covering 13 of strips of thin flexible paper 15 that is crumpled transversely into a soft rounded strand as shown. The paper strips 15 may be untwisted, or if desired, they may have a slight twist, but it is preferable that the twist be not great enough to render the paper hard and non-compressible. The covering 13 is shown as formed of two spirally wound strips 15, but a greater or smaller number of strips may be employed.

The spiral coils of the strips 15 are preferably laid sufficiently close together to cause their adjacent edges to overlap as at 16, and since the strips forming the coils are relatively soft, their overlapping edges will sink into each other to form a smooth tight joint as shown. As a result of this construction it is practically impossible for the metal

slivers such as 17 that are accidentally formed upon the edges of the metal strip, to enter the tightly closed joint 16.

The strip of metal forming the armored jacket 14 is preferably wound sufficiently tight about the covering 13 to cause the metal coils to sink slightly into the surface of the cushioning material 13 to thereby lock the covered conductors against sliding movement within the armored jacket.

As above stated an important feature of the present invention resides in means for preventing the covering for the conductors 10 from being cut or chafed by the sharp edges which are necessarily formed at the end of the armored jacket 14 when the jacket is cut transversely. This is accomplished by providing a bushing or sleeve 18 which is preferably cut longitudinally as shown in Fig. 4 so that the sleeve may be opened out sufficiently to permit its insertion laterally over the covered conductors. The bushing may be made of spring metal if desired, but is preferably made of insulating material, and may be compressed between the fingers, as will be apparent from Fig. 4 to facilitate the insertion of the bushing within the end of the armor 14.

Before the bushing 18 may be inserted in the armored sheath it is necessary to provide a clearance space for the bushing, but this is readily done by drawing several coils of the fibrous material 15 out of the space between the covered conductors 12 and metal sheath 14 as will be apparent from Fig. 2, whereupon the expansion bushing may be readily inserted to its final position in which it is shown in Fig. 5. The expanding action of the bushing will hold it in place in the armored sheath, and the bushing is preferably provided with a flange 19 at its outer end that will abut against the end of the armored sheath.

The bushing 18 is not only easy to insert in the end of the armored sheath, but it provides a smooth surface for the covered conductors and eliminates any chance of the insulation upon the conductors being injured by the edges at the end of the armored sheath. Furthermore, it constitutes a reinforcing sleeve or support for the inner wall of the metal sheath. This will facilitate the securing of a clamp or other form of attachment tightly about the outer end of the reenforced armor preparatory to securing the armor to the casing of an outlet box.

The insulating covering 12 and 13 may be treated with any of the usual moisture proofing compounds, and if desired a ground wire 20 may be laid alongside the covered conductors 12 so that it is enclosed and protected by the covering 13. This ground wire is highly desirable as it forms a dependable ground between the outlet boxes to which the conductors may be connected, but such

ground wire is not claimed herein as it has been made the subject matter of a separate application filed by me.

The modified construction shown in Fig. 6 differs from the construction shown in Figs. 1, 2, 3 and 5 only in that in Fig. 6 the protecting covering 13 is wound about a single insulated conductor 12, and the metallic jacket 14 is placed about this single conductor, whereas in Figs. 1, 2, 3 and 5 the covering 13 surrounds and unites two insulated conductors which are protected by the armor 14. In the modified construction of Fig. 7 each insulated conductor is provided with a protecting covering 13 which may be removed without disturbing the covering 13 upon the other conductor, and these two conductors are enclosed in the metallic jacket 14. In each of the constructions shown and described several coils of the protecting material 15 may be pulled out from the interior of the armored jacket 14 to form a clearance space for the bushing 18.

In the armored cables employed heretofore it has been customary to provide a braided or woven jacket over the two or more covered insulated conductors and then apply the armored covering directly over the braided or woven jacket in relatively snug engagement with the bracket. There is therefore not sufficient room between the metal covering and outer jacket of the armored cables constructed heretofore to receive a bushing 18, and it is practically impossible to remove a sufficient amount of the braided or woven jacket from the interior of the armored covering to form a sufficient clearance space to receive the bushing 18.

This difficulty is entirely overcome by employing the construction of the present invention, since the spirally wound covering 13 may be easily stripped off of the conductors 12 to produce the desired clearance for a bushing 18. The use of a spirally wound covering 13 has the further advantage in that it is much easier for the wireman to remove than braid, since he need simply unwind the former while he must cut the latter. Furthermore, the use of a spirally wound outer covering which the wireman can readily unwind without any cutting operation avoids injury to the underlying insulation, whereas when a braided outer covering is used the underlying insulation is frequently injured by the wireman as he cuts away the outer braided covering, and any injury to the underlying insulation necessarily increases the fire hazard.

What is claimed is:

1. An armored electric conductor comprising, an insulated wire, a protecting covering of insulating material surrounding the insulated wire, a metallic sheath or jacket enclosing the protecting covering and insulated wire, and a bushing interposed between the in-

insulated wire and the metallic sheath or jacket to protect the wire insulation from the edge formed at the end of the metallic sheath or jacket.

2. An armored electric conductor comprising, an insulated wire, a protecting covering of insulating material surrounding the insulated wire, a metallic sheath or jacket enclosing the protecting covering and insulated wire, and a bushing of insulating material interposed between the insulated wire and the metallic sheath or jacket to protect the wire insulation from the edge formed at the end of the metallic sheath or jacket.

3. An armored electric conductor comprising, an insulated wire, a protecting covering of insulating material surrounding the insulated wire, a metallic sheath enclosing said covering and insulated wire, and a split bushing interposed between the insulated wire and the metallic sheath to protect the wire insulation from the edge formed at the end of the metallic sheath.

4. An armored electric conductor comprising, an insulated wire, a protecting covering of insulating material wrapped around the insulated wire, a metallic sheath enclosing said covering and insulated wire, a bushing interposed between the insulated wire and the metallic sheath to protect the wire insulation from the edge formed at the end of the metallic sheath, and a flange at the outer end of the bushing adapted to abut against the end of the metallic sheath.

5. An armored electric cable comprising, insulated electric conductors laid side by side, a protecting covering of insulating material surrounding the insulated conductors, a metallic sheath enclosing said protecting covering and conductors, and a bushing interposed between the insulated conductors and the metallic sheath to protect the insulation of the conductors from the edge formed at the end of the metallic sheath.

6. An armored electric cable comprising, insulated electric conductors laid side by side, a protecting covering of insulating material surrounding and uniting the insulated conductors, a spirally wound metallic sheath enclosing said protecting covering and conductors, and a bushing interposed between the insulated conductors and metallic sheath to protect the insulation of the conductors from the edge formed at the end of the metallic sheath.

7. An armored electric conductor compris-

ing, an insulated wire, a metallic sheath enclosing the insulated wire, a protecting covering for the insulated wire comprising a strip of insulating material interposed between the insulated wire and metallic sheath and adapted for ready removal from the interior of the end portion of the metallic sheath to provide a clearance space between the sheath and insulated wire, and a protecting bushing mounted in said clearance space between the interior of the end portion of the metallic sheath and the insulated wire.

8. An armored electric conductor comprising, an insulated wire, a metallic sheath enclosing the insulated wire, a protecting covering for the wire comprising a strip of fibrous material laid spirally about the covered wire beneath the metallic sheath and constructed so that one or more coils may be stripped off of the covered wire from under the metallic sheath, and a bushing adapted to be inserted within an end of the metallic sheath in the clearance space formed by removing one or more coils of said fibrous material.

9. An armored electric cable comprising, insulated electric conductors laid side by side, a protecting covering surrounding the insulated conductors and formed of insulating material wound about the conductors, a metallic outer sheath enclosing the insulated conductors and protecting covering, a protecting bushing constructed to be inserted within an end portion of the metallic sheath, and the covering of insulating material being formed so that it may be pulled out of the end portion of the metallic sheath for a sufficient distance to form a clearance space for said bushing.

10. An armored electric cable comprising, insulated electric conductors laid side by side, an armored outer sheath formed of a metal strip wound spirally about the conductors, a protecting covering surrounding and uniting the covered conductors and formed of insulating material laid in coils about the insulated conductors beneath the armored sheath so that one or more coils may be removed from the interior of the end portion of the armored sheath to form a bushing receiving clearance space, and a protecting bushing adapted to be inserted in said clearance space between the armored sheath and conductors and provided with a flange adapted to abut against the end of the armored sheath.

In testimony whereof, I have signed my name to this specification.

OTTO A. FREDERICKSON

DISCLAIMER

1,687,013.—Otto A. Frederickson, Wethersfield, Conn. ARMORED ELECTRIC CABLE. Patent dated October 9, 1928. Disclaimer filed December 8, 1932, by the patentee, the assigner, National Electric Products Corporation, acquiescing.

Hereby enters this disclaimer to that part of the claim in said Letters Patent which is in the following words, to wit: claims numbered 1, 3, 4, 5, and 6; said claims reading as follows:

"1. An armored electric conductor comprising, an insulated wire, a protecting covering of insulating material surrounding the insulated wire, a metallic sheath or jacket enclosing the protecting covering and insulated wire, and a bushing interposed between the insulated wire and the metallic sheath or jacket to protect the wire insulation from the edge formed at the end of the metallic sheath or jacket."

"3. An armored electric conductor comprising, an insulated wire, a protecting covering of insulating material surrounding the insulated wire, a metallic sheath enclosing said covering and insulated wire, and a split bushing interposed between the insulated wire and the metallic sheath to protect the wire insulation from the edge formed at the end of the metallic sheath."

"4. An armored electric conductor comprising, an insulated wire, a protecting covering of insulating material wrapped around the insulated wire, a metallic sheath enclosing said covering and insulated wire, a bushing interposed between the insulated wire and the metallic sheath to protect the wire insulation from the edge formed at the end of the metallic sheath, and a flange at the outer end of the bushing adapted to abut against the end of the metallic sheath."

"5. An armored electric cable comprising, insulated electric conductors laid side by side, a protecting covering of insulating material surrounding the insulated conductors, a metallic sheath enclosing said protecting covering and conductors, and a bushing interposed between the insulated conductors and the metallic sheath to protect the insulation of the conductors from the edge formed at the end of the metallic sheath."

"6. An armored electric cable comprising, insulated electric conductors laid side by side, a protecting covering of insulating material surrounding and uniting the insulated conductors, a spirally wound metallic sheath enclosing said protecting covering and conductors, and a bushing interposed between the insulated conductors and metallic sheath to protect the insulation of the conductors from the edge formed at the end of the metallic sheath."

[Official Gazette January 3, 1933]

No. 681,416.

Patented Aug. 27, 1901.

J. H. GOENST & C. N. WILKES.
OUTLET FOR ELECTRIC CONDUCTORS.

(Application filed Dec. 17, 1900.)

(No Model.)

2 Sheets—Sheet 1

Fig 1

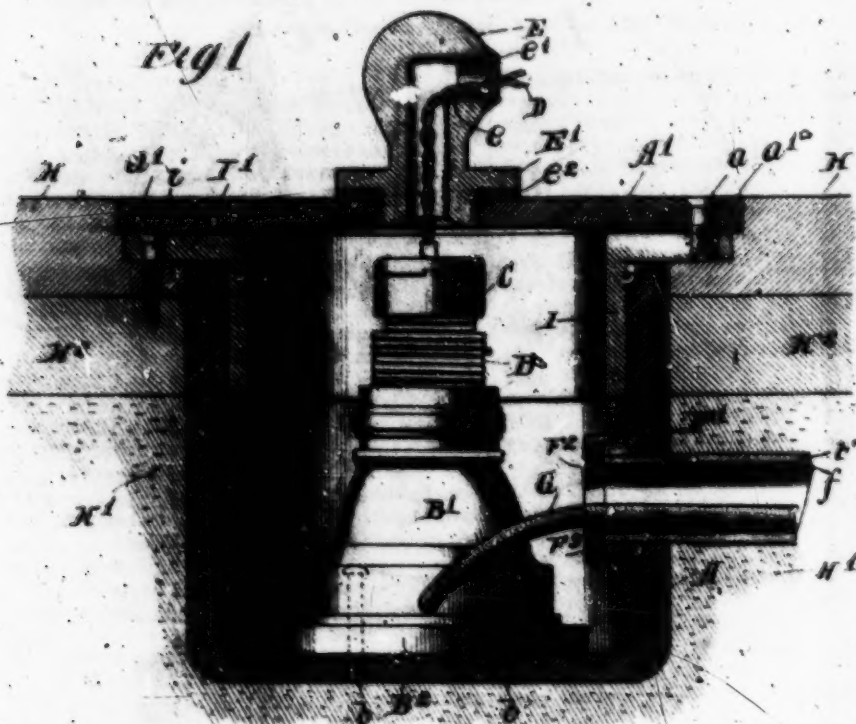


Fig 2



Fig 3



Witnesses:

Earl H. Crawford
William L. Hall, by

Inventors:

John H. Goenst
Charles M. Wilkes

John H. Goenst

Their Attorneys

No. 521,415

Patented Aug. 27, 1901.

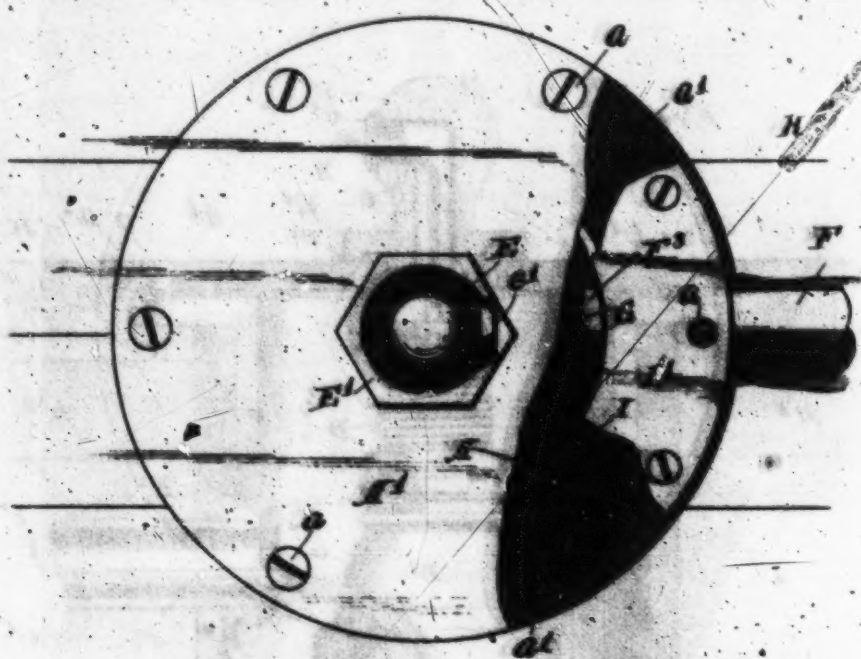
J. H. SOENST & C, H. WILKE.
OUTLET FOR ELECTRIC CONDUCTORS.

(Application filed Dec. 27, 1939.)

(See Model 1)

2 Sheets - Sheet 2

Fig 4



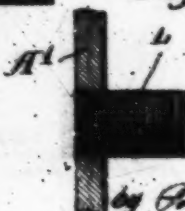
1945



Fig 8



Fig 7



Witnesses:-
Carl H. Bradford
J. L. Hall

Inventors:
John H. Gookist
Charles M. Melkes
Brown their Attorneys

UNITED STATES PATENT OFFICE.

JOHN H. GOENST AND CHARLES M. WILKES, OF CHICAGO, ILLINOIS.

OUTLET FOR ELECTRIC CONDUCTORS.

SPECIFICATION forming part of Letters Patent No. 931,416, dated August 27, 1901.

Application filed December 17, 1900. Serial No. 43,122. (No model.)

To all whom it may concern:

Be it known that we, JOHN H. GOENST and CHARLES M. WILKES, of Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Outlets for Electric Conductors; and we do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to an improved outlet-box for electric conductors for use in office-buildings, banks, residences, and like places through which conductors are led from conduits in or on the floor, ceilings, or walls of an apartment to electric lamps, electric fans, telephones, signal devices, or the like. The outlet-box is herein shown as embedded in a floor of a building; but it may be adapted for use in other locations—as, for instance, in the ceiling or wall of a room.

The object of the invention is to provide an outlet of this character which will be water-tight, which may be adjusted readily and accurately to any construction or character of floor or wall, and which is readily accessible to permit renewal or repair of the socket or fuse-plug which is contained within the outlet-box.

As shown in the drawings, Figure 1 is a vertical section taken through a floor and outlet, illustrating, partly in section and partly in elevation, an outlet-box made in accordance with my invention. Figs. 2 and 3 are fragmentary plan and sectional views, respectively, of the cover of the box, showing the plug for closing the aperture therein when the nozzle is removed. Fig. 4 is a plan view of the box with parts broken away to show the subjacent parts. Fig. 5 illustrates a double nozzle for the box. Fig. 6 illustrates another modification of the nozzle. Fig. 7 shows an adaptation of the invention to a ceiling or wall outlet.

As shown in said drawings, A indicates the body of a metal outlet-box, which is closed at its sides and bottom and open at its top and is made of an integral casting. The said box is closed by a flat cover A'.

B designates the usual socket located within the box and attached to the upper end of

a socket-base B', of insulating material, which is secured by screws b to the lower or inner wall of the box. Desirably an insulating-disk or subbase B'' is interposed between the lower end of said base B' and the bottom of said box.

C designates the usual plug, which has screw-threaded engagement with the socket B and to which is connected flexible conductors D, which are covered with the usual insulating or fabric covering and lead out through the cover A' of the box. Said plug may be a fuse-plug, in which case it will contain any usual or preferred form of safety-fuse or lightning-arrester. Said conductors are led from said box through a nozzle E, which has screw-threaded engagement with an aperture in the cover A' of the box and is provided at its upper end with an opening e, through which the conductors are led. Said nozzle-opening is desirably provided with an insulating-bushing e', which is so constructed as to prevent contact of the metal conductors with the body of the nozzle should the insulating-covering become chafed or worn away. Said nozzle is provided near its base with a radial flange F', which overlaps the cover of the box, and between said flange and the said cover is inserted a packing-ring or gasket e'' to make a water-tight joint at this point.

F designates a pipe constituting a conduit which leads into one side of the box, above the bottom thereof, and through which the conductors are carried into said box, where they are connected with the socket-base B' in the usual manner. In some instances two conduits may enter said box, preferably from opposite sides thereof, whereby one or more conductors may be carried to the box or through said box, around the socket-base B' therein. The pipe constituting said conduit F has screw-threaded engagement with the wall of the box and is held in place with respect to said wall by a jam-nut F', which has screw-threaded engagement with the inner end of the pipe and bears against the inner face of the box-wall. The conduit-pipe is shown as provided with the usual insulating-lining f, and the end of the pipe is shown as provided with an insulating-ring F'', which is held in place by a ferrule F'', which has screw-threaded engagement in the inner end

of the joint and F and provided at its outer end with an turned flange which overlaps said ring, as shown in Fig. 1.

The cover A' of the outlet-box is adjustable with respect to the body of the same, so as to enable said cover to be properly located with respect to the upper surface of the floor H in which the box is located—that is to say, with the upper surface of said cover flush with the upper surface of the floor. As a means of accomplishing this result, said cover is herein shown as attached to a ring I which has adjustable as well as water-tight connection with the open end of the box. Said ring, as shown, fits within the upper open end of the box A and is exteriorly screw-threaded for engagement with interior screw-threads in said box. To provide for the removable attachment of the cover to said ring, the latter is provided at its upper margin with a horizontal annular radial flange I', which extends laterally beyond the upper edge of the box parallel with said cover, and said cover is secured to said flange through the medium of countersunk screws a, which pass through the marginal part of the cover and into the flange. A packing-ring or gasket w is interposed between said cover and flange I' to insure a water-tight joint between said parts. The floor H is cut away or rabbeted around the opening therein which receives the cover a depth sufficient to receive the flange I' and cover A', so as to bring the upper surface of said cover level with the floor. The screw-threaded connection described enables the cover to be raised or lowered relatively to the body of the box, and when properly adjusted the ring is intended to be permanently fixed in position with respect to said body.

The body of the outlet-box is usually installed in or on the floor-supports at the time the conduits F are placed in position, and said work is ordinarily done before the floor H is laid. As, for instance, in the case of the prevailing construction in fireproof buildings in which a concrete filling is placed over the iron girders and tile arches between the same, on which filling the floor is laid, the conduits and the body of the box will be laid or embedded in such filling. If the top wall or cover A' of the box were non-adjustably fitted to the body of said box, it would be exceedingly difficult, if not impossible, to so install the box that the said upper wall would be accurately flush with the upper surface on the floor when the floor is finished. With the adjustable connection described, however, the body of the box may be installed or secured in place without regard to the final level of the floor proper, care only being taken that the box be placed in a properly horizontal or level position, and the said ring, after said floor has been laid may be vertically adjusted with respect to said body to the requisite height to bring the top of the cover flush with the upper surface of the floor. In order to secure a permanent and

water-tight connection between the parts after the proper adjustment of the ring I is effected, the screw-threaded joint between the ring and the body of the box is loaded. The floor herein shown is a composite one, such as is above referred to and is commonly found in modern office-buildings, the same consisting of a base H', made of concrete floor-supporting strips H'', which are laid over said base, and the superlayer H or the floor proper, which is supported on said strips in the usual manner. Desirably and in order to effect a more certain attachment of the body of the box to the floor countersunk wood screws i are inserted through the horizontal annular flange of the ring I and into the floor. The outlet-box may, however, be employed in connection with floors of other construction and may be inserted into the floor after the same is finished. In this latter event the adjustable connection of the top or cover A' with the body part of the box is equally desirable, for the reason that it obviates the necessity of fitting the body of the box accurately in place, and thereby enables the same to be installed with a less expenditure of time and labor than would be required if an adjustment between the parts of the box were afforded. When the outlet is not in use, the nozzle E is removed and the aperture in the cover of the box is closed by means of a plug A'', which is screw-threaded to engage said wall, as shown in Figs. 2 and 3, and is flush with the top of the cover when inserted. Said plug is provided with a slot c' for engagement therewith of a suitable implement by which said plug may be turned into and out of place.

In Fig. 5 is illustrated a nozzle J, similar to the nozzle E, with the exception that it is provided with two laterally-directed openings j for the passage of the conductors from the plug C. Said laterally-directed openings are provided with insulated bushings j', as in the construction before described. An advantage gained by arranging the outlet opening or openings of the nozzle so that they are directed laterally instead of extending through the top of the nozzle is that such lateral disposition of the openings prevents injury to the conductors such as might occur in case of the contact with the nozzle of the feet of a person sitting at a desk or under like circumstances.

In some instances, as where the outlet-box is placed underneath or at the side of a desk upon which is located an electrical device to which it is desired to lead electric conductors and it is not desirable to have exposed conductors which may become entangled with the articles surrounding them, the nozzle K may be elevated above the floor by being attached to the upper end of a straight pipe K', as shown in Fig. 6, which pipe has screw-threaded engagement at its lower end with the box-cover and is adapted to extend at its upper end near or into the desk. Said nozzle

K may be made like either of the nozzles before described, and the pipe is made of the length required to adapt it to any particular location.

5 In Fig. 7 we have shown a means of adapting our invention to a wall or ceiling outlet. The general form of the box will in this case be the same as that already illustrated. In place of the nozzles heretofore described the
10 conductors are adapted to be led from the box through a nipple L, which is screw-threaded at its end projecting from the box to receive a lamp fitting or bracket. The nipple may consist of a short tube which has
15 screw-threaded engagement with the cover of the box, as shown in said drawings, or may be made integral with the said cover.

We claim as our invention—

1. An outlet comprising a box and a removable cover for said box provided with a nozzle rising above its upper surface and forming a passage for conductors, said cover having a detachable, water-tight connection with the box.

2. An outlet comprising a box-body, a removable cover therefor, means affording water-tight connection of the cover with the body, constructed to permit adjustment of the cover with respect to the body, and a nozzle for the passage of conductors secured to said cover and communicating with the interior of the box.

3. An outlet comprising a box-body, a removable cover for said body provided with an aperture for the passage of conductors, and an intermediate ring between the cover and the body with which said cover has detachable water-tight connection, said ring having screw-threaded and water-tight connection with the body, whereby the cover may be adjusted with respect to said body.

4. An outlet comprising a box, a removable cover which is secured to the box by a detachable water-tight connection and is provided with an aperture for the passage of conductors and a nozzle having screw-threaded and water-tight connection with the aperture in the cover.

5. An outlet comprising a box, a cover having detachable water-tight connection with the box, and a nozzle rising from the cover provided with a passage for conductors, said box having connected therewith an outwardly-extending flange, located below the

level of the cover and adapted for insertion therethrough of screws for securing the box to a support located below the level of the surface of the floor in which the box is placed.

6. An outlet comprising a box-body, a cover for closing said body, a ring which has screw-threaded engagement with the open end of said body, means for removably attaching said cover to said ring, and a nozzle which has detachable connection with said cover and which communicates with the interior of the box.

7. An outlet comprising a box-body, a cover for said body, a ring which has screw-threaded engagement with the open end of said body, means for removably attaching said cover to said ring, a nozzle which has screw-threaded engagement with said cover, and the bore of which communicates with the interior of the box, and a packing-ring between the base of said nozzle and the cover.

8. An outlet comprising a box having a removable cover, and a nozzle adapted for attachment to the cover and having a lateral exit-opening for the passage of conductors therefrom.

9. An outlet comprising a box having a removable cover provided with a screw-threaded aperture, and a nozzle which is screw-threaded at one end to engage the aperture of the cover and is provided near its opposite end with an exit-opening for the passage of a conductor, said opening being provided with a bushing of insulating material.

10. The combination with a conduit, of an outlet comprising a box-body, a cover for said body, a ring which has adjustable connection with the body and to which the cover is detachably secured, a socket secured in the box-body and separated by insulating material therefrom, and conductors leading through the conduit to the said socket, said cover being provided with a detachable nozzle for the passage of conductors from the box.

In testimony that we claim the foregoing as our invention we affix our signatures, in presence of two witnesses, this 11th day of December, A. D. 1900.

JOHN H. GOEHST.
CHARLES M. WILKES.

Witnesses:

W. L. HALL,
GERTRUDE BRYCE.

No. 799,980.

PATENTED SEPT. 19, 1905.

C. J. KLEIN.
OUTLET BOX.

APPLICATION FILED SEPT. 22, 1904.

3 SHEETS—SHEET 1.

Fig. 1.

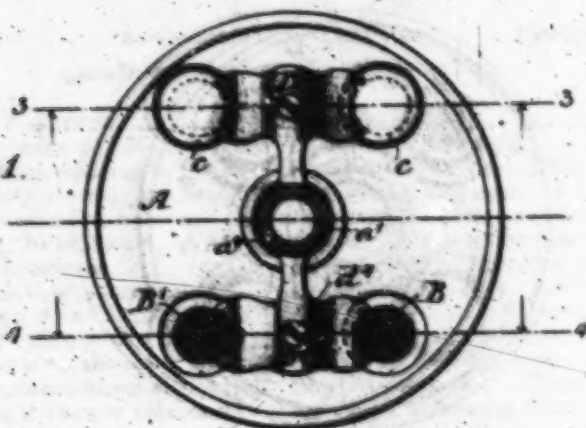


Fig. 2.

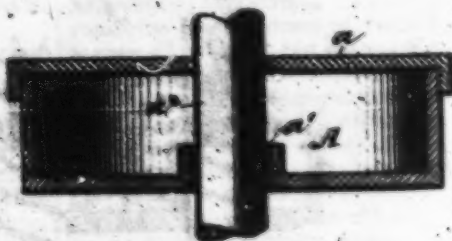


Fig. 3.

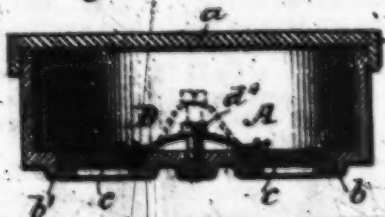
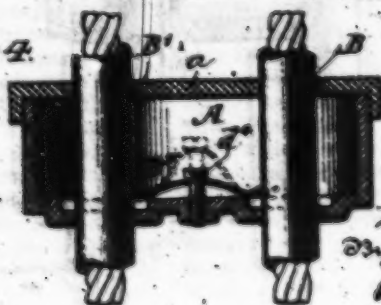


Fig. 4.



Witnessed:
Philip Mendel
John Mangum

Inventor:
Charles J. Klein
By [Signature]
his Attorney

Q. J. KLEIN.
OUTLET BOX.

APPLICATION FILED SEPT. 23, 1904.

3 SHEETS—SHEET 2.

Fig. 6.

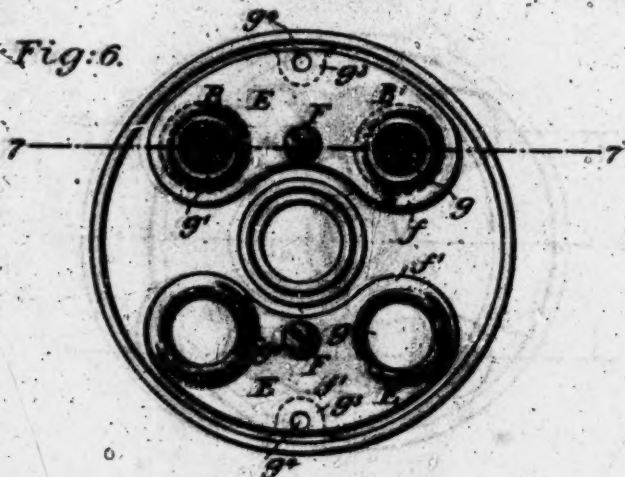


Fig. 7.

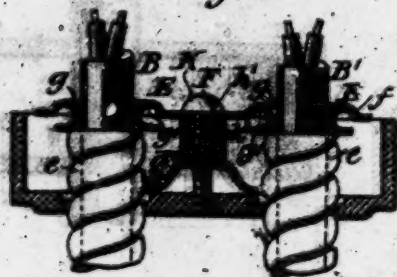


Fig. 8.



Witnesses:

Philip M. Smith

Victor H. Hargrave

Inventor:

Robert J. Klein

By

Raymond H. Hargrave
his Attorney

UNITED STATES PATENT OFFICE.

CHARLES J. KLEIN, OF NEW YORK, N. Y., ASSIGNOR TO RALPH A. SCHOENBERG, OF NEW YORK, N. Y.

OUTLET-BOX.

No. 799,999.

Specification of Letters Patent.

Patented Sept. 19, 1905.

Application filed September 23, 1904. Serial No. 298,574.

To all whom it may concern:

Be it known that I, CHARLES J. KLEIN, a citizen of the United States, residing in the borough of Manhattan, city, county, and State of New York, have invented certain new and useful Improvements in Outlet-Boxes, of which the following is a specification.

My invention relates to what are technically known in the electrical art as "outlet-boxes" or "junction-boxes"—that is, to a box or receptacle which provides for the ready making or changing of electric connections with outlet-conductors secured in the box or receptacle.

The invention has for its object to provide an improved outlet-box which will be superior in point of convenience in installation and use, positiveness in operation, inexpensiveness in construction, and general efficiency.

I will describe an outlet-box embodying my invention and then point out the novel features thereof in claims.

In the accompanying drawings, Figure 1 is a top plan view of an outlet-box embodying my invention, the cover therefor being removed. Fig. 2 is a central and vertical transverse sectional view with the cover in place. Fig. 3 is a vertical transverse sectional view taken on the line 3 3 of Fig. 1. Fig. 4 is a view similar to Fig. 3, but taken on the line 4 4, Fig. 1. Fig. 5 is a detail view. Fig. 6 is a view similar to Fig. 1 and showing a modified form of construction. Fig. 7 is a view similar to Fig. 4 and taken upon the line 7 7 of Fig. 6, and Fig. 8 is a view similar to Fig. 7 and showing a still further modified form of construction.

Similar letters of reference designate corresponding parts in all of the figures.

Referring now to the drawings, A designates a suitable box or receptacle which is preferably provided with a removable cover a. The box may be of any dimensions and contour. As shown in the drawings, it is cylindrical. The box is provided with a flanged or other opening a', here shown as being centrally located, which receives a support a". The box is also provided or formed with one or more openings b b', &c., through which outlet or other conductors or cables B B', &c., or the armor or conduits of or for the same may be passed. The openings are preferably formed with a shoulder which serves as a support for a disk c. A disk is provided for each opening through which a conductor B

B' is not passed. These disks and the conductors are held in the box and the box secured to the support A" by preferably a common means, although, if desired, the box may be secured to its support, by independent means. In the latter case, as will hereinafter appear, such independent means should have a metallic connection with the means for securing the disks and conductors in the box.

D D' designate common means for securing the conductors and disks in the box and the box to its support. These means preferably are such that when pressure is applied to them they will act to clamp or otherwise bind or hold the disks and conductors in the box. They are also independent of the box and may be removed therefrom. As here shown, they comprise bowed pieces of resilient metal and screws d', which when passed through a suitable opening in the box tend to flatten the metal, and thus cause its edge portions to move laterally. As shown in Fig. 5, each metal piece comprises three arms d d' d", two of which when the piece is in position in the box extend toward two adjacent conductor-openings in the box and the third toward the support. It will be understood that these pieces before being subjected to pressure by the screws d' are of such size as not to cover the conductor-openings; but when subjected to pressure they will extend over the openings, thus serving to hold a disk or disks or a conductor or conductors in place. The edge portions of two of the arms may be formed in any desired manner to firmly engage with the conductors to hold them in the box. The same is true of the third arm, which acts to hold the box to the support. It will be understood that the means D D', instead of being the common means described, may be provided with only two arms to coact with conductors or disks, and separate means may be employed to hold the box on the support, in which latter case said separate means should be electrically connected, respectively, with the means D D'. Preferably the support will be of metal—for example, a pipe which has some metallic connection with the ground. The advantage of this is that should there be any defect in the insulation of the conductor or conductors within the box the securing means D D' will serve as a path directly to the ground. This should be true whether the means D D' act to secure the conductors and disks in the box and the box to

the support or only the conductors and disks in the box.

The means D D' do not destroy the insulation of the conductors when subjected to pressure, but only act to clamp, bind, or hold the conductors in the openings. As regards the disks, the means D D' when subjected to pressure extend over the disks (see Fig. 3) to hold them on the shoulders.

It will be understood that the disks when retained in the openings δ V by the means D D' serve to close said openings and maintain a closed condition of the outlet-box.

In the modified form of construction illustrated in Figs. 6 and 7, a bushing device E is provided for the end portion of the armor of each conductor B and B', each bushing device E surrounding the conductor where it projects within the outlet-box beyond the armor and preventing the contact of the end of the armor with the conductor. Were such contact permitted, the insulation of the conductor would be subjected to chafing and cutting, tending to pierce the insulation and short-circuit the conductor. In practice the bushing device E is held firmly in place by securing means F, and two of the bushing devices are comprised in a single rigid metallic plate of which two, f and f' , are shown, each plate f and f' being formed at each end with an opening g , through which one of the conductors, such as B and B', passes, the plate fitting closely down upon the side of the armor of the conductors at the marginal portions of the openings g and effectually keeping the conductors out of contact with such ends of such armor. With this end in view the marginal portions of the openings g are preferably crimped or curved, as at g' , to fit closely over the ends of the armor. Each plate f and f' may be provided with an ear g^2 , having a threaded opening g^3 to receive a screw for securing the cover of the outlet-box in position. The plates f and f' are arranged above the securing means D D', and the securing means F consist of screws k , which pass through openings k' in the plates f and hold the latter firmly in place, preferably entering tapped openings k^2 in the screws d^2 , which hold the securing means D D' in place.

In the modified form of construction illustrated in Fig. 8 the conductors D D' are shown as entering the outlet-box within conduits L such as commonly are permanently installed in buildings and independent of the conductors themselves, the conductors being commonly drawn through the conduits, and thus lead to the desired points. In the use of such conduits a material space commonly surrounds the conductors within the same, and this permits of flanging the marginal portions of the openings g of the plate f or f' , constituting the two bushing devices E, as at g^2 , such flanged marginal portions g^2 fitting over the end portions of the conduits L and

within the latter between the conductors and the conduits, effectually keeping the conductors out of contact with the ends of the conduits with the same purposes as accomplished in connection with the conductors and armor construction disclosed in Figs. 6 and 7.

The plate f or f' , or both, may be secured in position, as illustrated, in the same manner as described in connection with the illustration in Figs. 6 and 7.

I do not desire to be understood as limiting myself to the specific construction arrangement and connection of parts as illustrated and described, but reserve the right to vary the same in adopting my improvements to varying conditions of use without departing from the spirit of the invention or the terms of the following claims.

Having thus described my invention, what I claim as new is—

1. An outlet-box having common means for holding conductors therein and the box to a support.

2. An outlet-box having openings through which cables may be passed and disks fitted to close the openings and provided with common means for holding conductors in the box or disks in the openings.

3. An outlet-box having openings through which cables may be passed and disks fitted to close the openings, and provided with common means for holding conductors in the box or disks in the openings and the box to a support.

4. An outlet-box having common means for holding conductors therein and the box to a support, said means constituting an electrical path between the conductors and the support.

5. An outlet-box having resilient means for holding conductors therein, said means consisting of a bowed piece which is flattened into holding position.

6. An outlet-box having resilient means for holding conductors therein, said means consisting of a bowed piece, and means for subjecting said means to pressure to flatten said bowed piece into holding position.

7. An outlet-box having resilient common means for holding conductors therein and the box to a support, said means consisting of a bowed piece, and means for subjecting said means to pressure to flatten said bowed piece into holding position.

8. An outlet-box having means for holding conductors therein, said means consisting of a bowed piece, and means laterally actuating said holding means into operative position by flattening said bowed piece.

9. An outlet-box having means for holding armored conductors therein, a bushing device applied to the conductors at the end of the armor of each, and means for securing said bushing device in position.

10. An outlet-box having means for holding a conduit therein, a conductor within the con-

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8

duit and projecting from the same within the outlet-box, and a bushing device applied to the conductor at the end of the conduit and extending between the conductor and the
5 conduit.

11. An outlet-box having a conduit therein, a conductor within the conduit and projecting therefrom, and a bushing device applied to the conductor at the end of the conduit and
10 extending between the conductor and the conduit.

12. An outlet-box having a plurality of conductors therein, and a plurality of bushing devices applied to said conductors within the outlet-box and comprising a plate provided
15 with openings through which the conductors pass.

13. An outlet-box having a conduit therein, a conductor within the conduit and projecting

from the end thereof, and a bushing device 20 applied to the conductor at the end of the conduit and provided with a flange extending between the conductor and the conduit and over the end of the conduit.

14. An outlet-box having a plurality of 25 conductors therein, and a plurality of bushing devices applied to said conductors within the outlet-box and comprising a plate provided with flanged openings through which the
conductors pass.

In witness whereof I have signed my name to this specification in the presence of two sub-
scribing witnesses. 30

CHARLES J. KLEIN.

Witnesses:

A. B. FULTON,
RAYMOND I. BLAKESLEE.

No. 848,819.

PATENTED APR. 2, 1907.

C. A. FREEMAN.
BUCKING COUPLING.
APPLICATION FILED NOV. 27, 1906.

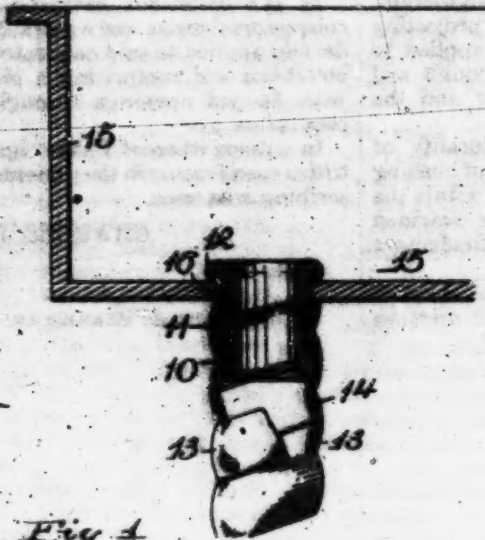


Fig. 1



Fig. 2

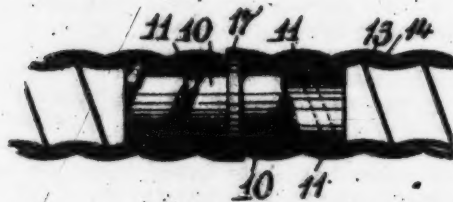


Fig. 3

WITNESSES:

E. A. Pell
R. Johnson

INVENTOR

Charles A. Freeman

BY

Wm. H. Campfield
ATTORNEY.

UNITED STATES PATENT OFFICE.

CHARLES A. FREEMAN, OF EAST ORANGE, NEW JERSEY.

BUSHING-COUPPLING.

No. 848,810.

Specification of Letters Patent.

Patented April 2, 1907.

Application filed November 27, 1900. Serial No. 348,390.

To all whom it may concern:

Be it known that I, CHARLES A. FREEMAN, a citizen of the United States, residing at East Orange, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Bushing-Couplings; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

This invention relates to a device that can be used as a bushing for electrical conduits, as a coupling between two ends of conduits, and also used to couple the ends of conduit to a conduit-box.

As previously coupled or provided with bushings the conduits are cut off and are provided with a lead or similar soft bushing, and they are then fastened up against a conduit-box or another conduit by the assistance of another mechanism. This present style of lead bushings are very soft, and when they become bent or mutilated inside they form a serious obstruction to the installation of wires or cables through the conduits. This invention is designed to provide an article of this kind, however, which is made of rigid metal, such as brass, and is adapted not to lose its shape, and forms a ready means for coupling a conduit to another element.

In the drawings, Figure 1 is a sectional view showing a conduit coupled to a box, and Fig. 2 is an elevation of the coupling. Fig. 3 is a broken section of a coupling used to connect two ends of conduits.

I provide in this device a tubular member 10, which is preferably made of a stiff rigid metal and can be cast; but I prefer to stamp or spin it from sheet metal. The tubular member is provided with a raised portion forming a thread 11; and on the device shown in Fig. 1 I form a flange or turned-over portion 12, and in case the device is made of sheet metal it is curled over to make it stiff to receive pliers or a similar tool. The tubular member is supposed to fit into a conduit made up, as usual, of the outer layer 13 and the inner layer 14, these being made of a soft metal, usually lead, and when the end is cut off of a conduit and placed up against a

conduit-box 15 the thimble or tubular portion 10 of the coupling is screwed down into the conduit by means of the pliers or by hand, and the thread 11 will fit, and force slightly apart, the meeting points of the coils of the inner layer 14 of the conduit and become locked, in a way, against accidental removal or displacement.

I have found that when screwing up a stiff rigid thimble of this sort in the yielding structure of the conduit the spreading of the members of the conduit grip the threads 11 hard enough to make it difficult to remove the coupling by force. Of course it will be understood that these members can be used on the end of a conduit by simply screwing it into the conduit and having it act as a bushing to give a smooth edge, which is required by the usual underwriter's regulation.

In Fig. 3 I show the device formed with the tubular member 10 being elongated and provided, as before, with the screw-thread 11, the apparatus being in this instance shown as cast. A central flange 17 is installed in this structure to receive a proper tool and to also act as a bearing on each side for the close fitting of the conduit, this structure forming a coupling between two ends of conduits and forming a joint that is very tight and that will not come apart and requires no outside fitting to go over the joint to keep the ends of the conduit together.

Having thus described my invention, what I claim is—

1. In combination with an electrical conduit having a lining wound in helical convolutions with a slight space between the windings, of a device comprising a rigid metallic tubular member to enter the conduit and having an external thread to enter the spaces between the windings of the conduit and arranged to partly spread the windings longitudinally and be locked therein, and having a flange for the reception of a tool.

2. In combination with an electrical conduit having a lining wound in helical convolutions, of a tubular metallic member having a thread to enter the juncture of the windings and arranged to part the windings longitudinally by its entrance and be locked therein, the member having a flange adapted to receive a tool.

3. In combination with an electrical conduit having a lining wound in helical convo-

lutions, of a tubular metallic member having a raised helical thread on its periphery to enter between the convolutions of the lining to spread them apart longitudinally and be held thereby, the tubular member being turned over to form a flange for the reception of a bolt.

In testimony that I claim the foregoing have hereunto set my hand this 24th day November, 1906.

CHARLES A. FREEMAN.

Witnesses:

WM. H. CAMPFIELD,

E. A. PELL.

No. 846,385.

PATENTED APR. 9, 1907.

C. A. HINSDILL.
CONDUIT BOX.
APPLICATION FILED APR. 20, 1906.

FIG 2

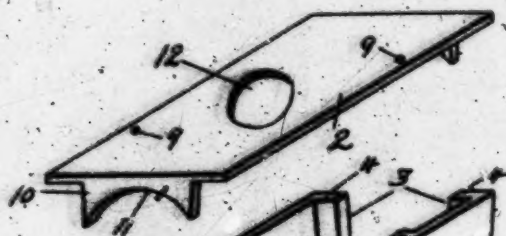


FIG 1

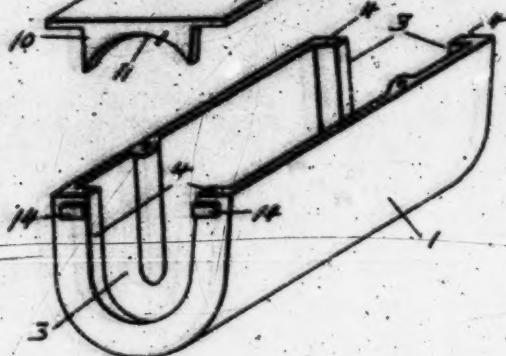
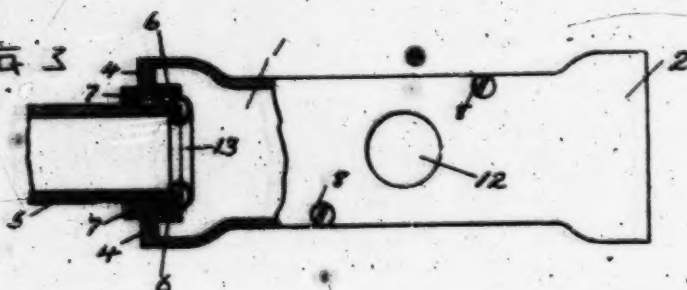


FIG 3



WITNESSES

J. C. Fisher
J. Dornbach

INVENTOR

Charles A. Hinsdill
By Maher & Carter
attys

UNITED STATES PATENT OFFICE.

243

CHARLES A. HINSDILL, OF TROY, NEW YORK.

CONDUIT-BOX.

No. 840,385.

Specification of Letters Patent.

Patented April 9, 1907.

Application filed April 25, 1905. Serial No. 312,754.

To all whom it may concern:

Be it known that I, CHARLES A. HINSDILL, a citizen of the United States, residing at Troy, county of Rensselaer, and State of New York, have invented certain new and useful Improvements in Conduit-Boxes, of which the following is a specification.

The invention relates to such improvements, and consists of the novel construction and combination of parts hereinafter described and subsequently claimed.

Reference may be had to the accompanying drawings and the reference characters marked thereon, which form a part of this specification.

Similar characters refer to similar parts in the several figures therein.

Figure 1 of the drawings is a view in isometrical perspective of the body of my improved conduit-box. Fig. 2 is a similar view of the cover thereof. Fig. 3 is a plan view of the covered side of a box of different shape from that shown in Fig. 1, partly broken away, and shown in section, with the conduit-pipe connected with one end of the box and shown in central longitudinal section.

The principal object of the invention is to facilitate the application of outlet-boxes to conduit-pipes, as well as to simplify the construction of the outlet-box.

Referring to the drawings, wherein the invention is shown in its preferred form, 1 represents the body of the outlet-box, having an open side adapted to be closed by a cover 2. One or both ends of the box-body are formed with open slots 3, extending to the open side thereof, forming parallel flanges 4 4, extending from the open side of the box inwardly. The box-body is adapted to be connected with the end of a conduit-pipe 5, through which the circuit-wires lead into or from the box. The end of the conduit-pipe 5 is externally screw-threaded and adapted to receive thereon a pair of nuts 6 and 7, the pipe being adapted to occupy the open slot 3 in the end of the box-pipe and the nut 6 and 7 to embrace and clamp between them the parallel flanges 4 on opposite sides of said slot.

The construction of the box is such that when the cover is removed the conduit-pipe, with the two nuts 6 and 7 upon its threaded portion, can be inserted in position through the open side of the box and the open end of slot 3, the nuts 6 and 7 being spaced sufficiently

apart to receive therebetween the side flanges 4. After the pipe has been thus inserted to the bottom of the slot 3 the nut 7 is screwed toward the end of the pipe until the flanges 4 are tightly clamped between the two nuts, thereby securing the box upon the conduit-pipe. When the box has been thus applied and secured to the pipe, the cover is applied to the open side of the box and secured thereupon by means of the screws 8, inserted through apertures 9 in the cover into the side walls of the box-body.

The cover is provided with an end flange 10 of less thickness than the flanges 4, adapted to fill the space between said flanges, having its end recessed, as shown at 11, to fit around the pipe 5, said flange 10 being adapted to pass freely between the nuts 6 and 7.

The cover is provided with an outlet-aperture 12 for the branch wires, (not shown,) which are connected with the main circuit-wires within the box.

My improved box can be applied to or removed from the end of a conduit-pipe or the neighboring ends of two or more conduit-pipes, it only being necessary to remove the cover from the box and loosen the locking-nuts 7, whereupon the box can be slipped off from the pipe or pipes, leaving the circuit-wires free of access to the workman and affording him ample space within which to perform his duties.

The nut 6 is shown provided with a sheet-metal head 13 to prevent injurious contact of the circuit-wires with the ends of the pipe. The circuit-wires are not shown.

As a means for preventing accidental displacement of the box in case the nut 7 should accidentally become slightly loosened, so as not to engage with sufficient force the end wall of the box, I have shown the end wall of the box provided on its outer side with lugs 14, adapted to overhang the nut 7 after the same has been partly screwed to its seat, whereby such displacement of the box is prevented.

In applying the box to the conduit-pipe it is only necessary to separate the nuts 6 and 7 sufficiently to permit the end wall flanges 4 and lugs 14 to pass therebetween.

What I claim as new, and desire to secure by Letters Patent, is—

1. An outlet-box for conduits, provided with an open side and an open slot in its end extending inwardly from said open side, and

having on opposite sides of said slot inwardly-extending flanges; and a cover for the open side of the box having a flange adapted to occupy the open end of said slot, and of a less thickness than the end wall flanges on opposite sides of said slot.

2. An outlet-box for conduits provided with an open side and an open slot in its end extending from said open side, and having on

the outer side of its end wall near the open end of said slot an outwardly-extending lug.

In testimony whereof I have hereunto set my hand this 17th day of April, 1906.

CHARLES A. HINSDILL

Witnesses:

E. M. O'REILLY,
J. DOWBACH.

H. A. GILBERT.

CONDUIT OUTLET.

APPLICATION FILED JUNE 24, 1909.

949,628.

Patented Feb. 15, 1910.

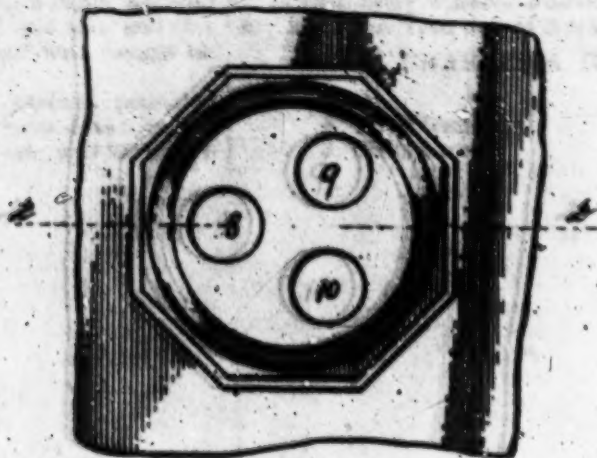


Fig. 1.

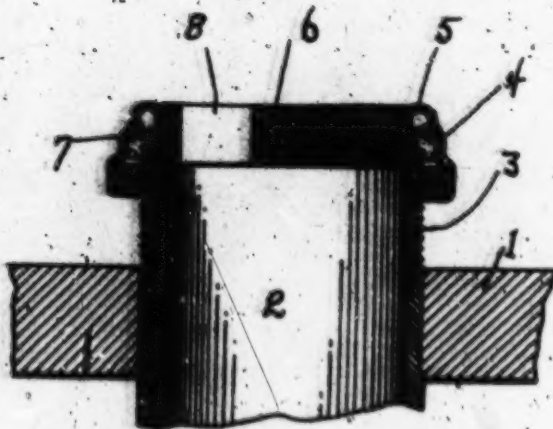


Fig. 2.

Witnesses:
C. A. Jones
Mabel Dittmanhofer

Inventor:
H. A. Gilbert
By Chas. E. and Wm. H. L. attorneys.

UNITED STATES PATENT OFFICE.

HAROLD A. GILBERT, OF NEW YORK, N. Y.

CONDUIT-OUTLET.

949,628.

Specification of Letters Patent.

Patented Feb. 15, 1910.

Application filed June 24, 1906. Serial No. 504,993.

To all whom it may concern:

Be it known that I, HAROLD A. GILBERT, a citizen of the United States, residing at Brooklyn, in the county of Kings, city and State of New York, have invented certain new and useful Improvements in Conduit-Outlets, of which the following is a clear, full, and exact description.

The object of this invention is to simplify and improve the outlet end of ordinary conduits for interior or other wiring, to eliminate the necessity of using outlet boxes or conduits at the outlet from the main conduit.

In carrying out my invention, I provide an insulated plug, preferably of fiber which is adapted to be secured in place by the outlet nut or bushing, which is generally placed at the end of a conduit to protect the wires from the sharp edges thereof. This plug of insulation is provided with one or more holes, as may be desired, which will depend of course, upon the number of wires it is desired to bring into a room from a given conduit.

The scope of my invention will be pointed out in the claims.

In the accompanying drawings, Figure 1 is a plan view of a conduit equipped with my invention. Fig. 2 is a section on line 2-2 of Fig. 1.

In the drawings, the floor is represented by the reference numeral 1; the pipe or conduit 2 is provided with the usual threaded end 3, a bushing 4 of the hexagonal nut type with a curve or rounded edge 5, is provided for the end of the conduit, the insulating plug 6 is provided with an annular rim 7, at a slight distance from each of the surfaces of the plug. The plug is provided with a perimeter of such shape and contour that it will fit the opening in the outlet bushing 4. Holes 8, 9 and 10, three in number in the present instance, are shown, for the outlet of the wires although the number of holes may obviously be varied. The out-

standing rim 7 of the plug is located as shown in the drawings, preferably for the purpose of providing a depending insulating part within the piping to make it practically impossible for any wiring to come in contact with the pipe near its outer end.

The use of this device will be obvious to one skilled in the art in view of the statement in the fore part of the specification.

I would call attention to the fact that the nut or bushing 4 can be secured in place by threading without rotating the bushing, so that the wires may be brought through the plug, and the bushing inserted without turning or twisting the wires or plug.

I claim as my invention:

1. The combination with an exteriorly threaded outlet conduit, and its interiorly threaded bushing having a lip overhanging the end of the conduit, an apertured plug of insulation loosely fitting within the bushing and means for securing the same in place upon and by the threading of the bushing into place.

2. In combination with an outlet bushing and conduit, an apertured plug of insulation loosely fitting within the orifice from the bushing, and provided with an extending rim adapted to fit against the end of the conduit, and against which the bushing will bear to hold the same in place.

3. In combination with an outlet bushing and conduit, an apertured plug of insulation fitting within the orifice from the bushing, and provided with an extending rim adapted to fit against the end of the conduit, and against which the bushing will bear to hold the same in place, said insulated plug extending below its rim into the conduit.

Signed at New York city this 21st day of June, 1906.

HAROLD A. GILBERT.

Witnesses:

F. WARREN WRIGHT,
THOMAS G. TURNER.

E. G. APPLETON.
CONNECTOR.
APPLICATION FILED DEC. 10, 1914.

1,192,150.

Patented July 25, 1916

FIG. 1.

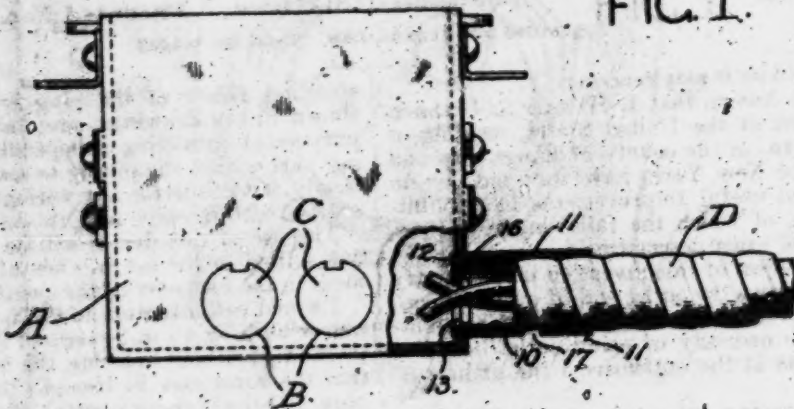


FIG. 2.

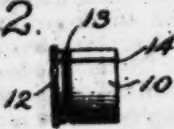


FIG. 4.

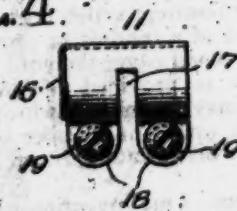


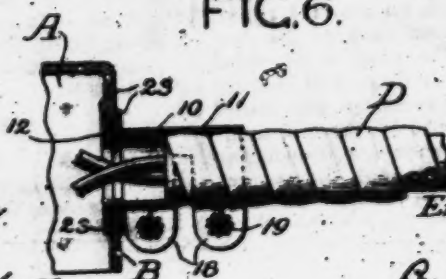
FIG. 3.



FIG. 5.



FIG. 6.



Witnesses:

J. O. Beck.

C. Paul Parker.

Inventor:

Ernest G. Appleton.

By Miller & Schmidt
Attys.

UNITED STATES PATENT OFFICE.

HERBERT G. APPLETON, OF CHICAGO, ILLINOIS, ASSIGNOR TO CHICAGO PUMP MANUFACTURING COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

CONNECTOR.

1,192,150.

Specification of Letters Patent.

Patented July 25, 1916.

Application filed December 10, 1914. Serial No. 974,992.

To all whom it may concern:

Be it known that I, HERBERT G. APPLETON, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have made certain new and useful improvements in Connectors, of which the following is a specification:

This invention relates to an improved connector for securing various electric conduits, including armored cable, flexible metallic conduit, and rigid conduit, to outlet boxes, steel cabinets, or the like.

The object of the invention is to provide a connector which is simple in construction and cheap to manufacture, which may be quickly and easily applied to the cable and the box, and which provides a strong mechanical connection between the cable and the box and also a superior electrical connection.

In the accompanying drawings, Figure 1 is a side elevational view partially in section showing a cable and a junction box secured together by a connector embodying the features of my invention. Figs. 2 and 3 are respectively a side and an end elevation of a thimble forming one element of the connector. Figs. 4 and 5 are respectively a side elevation and a transverse sectional view illustrating the clamp member of the connector. Fig. 6 is a sectional view illustrating a construction adapting the connector for association with openings in the box of larger diameter than the connector.

The preferred embodiment of the invention will be herein described in detail, without any intention, however, of limiting the invention to the precise details disclosed, except as specified in the appended claim.

In the drawings, A indicates a junction box having the usual knock-out openings B which are originally closed by plugs C.

D indicates a flexible conduit.

The connector comprises a thimble 10 adapted to pass through a knock-out opening in the box, and a dual clamp 11, one end of which grips the said thimble and the other end of which grips the conduit. The thimble 10 is provided at its inner end with a stop shoulder in the form of an annular flange 12 which lies along the inner face of the box wall around the opening B. The thimble is also provided with an external annular groove 13, which lies along the outer face of the box wall when the thimble is in

place. The thimble may be formed in different ways, one way being to roll a piece of sheet metal into cylindrical form with the edges abutting as seen at 14 in Figs. 2 and 3. The clamp 11, if desired, may also be formed from a single piece of sheet metal rolled into cylindrical form, thereby providing a longitudinal slot 15 running throughout its length. The inner end of the clamp is preferably turned in slightly, as indicated at 16, to provide a flange to engage in the groove 13 of the thimble. The clamp is partially divided by a transverse slot 17 into two independent clamping sections. Each of these sections is provided with a pair of approximately parallel ears 18 at opposite sides of the slot 15, and each pair of ears is arranged to be drawn together by means of a screw 19 passing loosely through an opening 20 in one of the ears and threaded in an opening 21 in the other ear. Preferably, these openings 20 and 21 are punched somewhat smaller than required and are then flanged out as at 22 to provide the equivalent of a thicker metal.

In the operation of securing a cable or conduit in place, the thimble 10 is passed through the opening B from the inside of the box, the clamp 11 is passed over the thimble until the flange 16 seats in the groove 13, and the inner screw 19 is tightened up to contract the inner section of the clamp upon the thimble. The cable D is now inserted into the outer end of the clamp, the end of the thimble 10 forming a stop shoulder against which the end of the cable abuts. The outer screw 19 is now tightened up to grip the cable. The shoulder or flange 12 on the thimble prevents the thimble from being pulled out of its opening. When the knock-out opening B in the box is of larger diameter than the connector, a pair of dished washers 23, shown in Fig. 6, is provided to fit around the thimble 10 and within the knockout opening B, said washers in effect constituting a continuation of the box wall. The operation of associating these washers with the other parts in securing a cable will be apparent and need not be described.

It will be seen that my improved connector is simple in construction and cheap to manufacture, and that it may be quickly applied and forms a very strong connection for the cable or conduit.

I claim as my invention:

- A connector of the character described, comprising a cylindrical shank adapted to pass through a hole, having, the shank, having a flange at its inner end to engage the wall at the edge of said opening and having an external annular groove positioned to be adjacent to the outer face of the box wall, and a short-metal cylindrical clamp transversely slotted to provide two partially separated and independently acting clamp-sections, and longitudinally slotted to provide two pairs of parallel and adjacent ears on the respective clamp-sections,

said ears being perforated, and means on the shank in the perforation for independently contracting said clamp-sections to grip said shank and a cable respectively, one of said clamp-sections having an internal edge providing an annular flange at its end adapted to engage in the annular groove in said shank.

In testimony whereof, I have set my hand in the presence of two witnesses.

ERNEST G. APPLETON.

In the presence of—

Wm. W. Munroe,
Geo. C. Rens.

L. E. WEBSTER.

JUNCTION BOX COUPLING FOR ELECTRIC WIRE CONDUITS.

APPLICATION FILED OCT. 16, 1915.

1,845,077.

Patented Oct. 30, 1917.

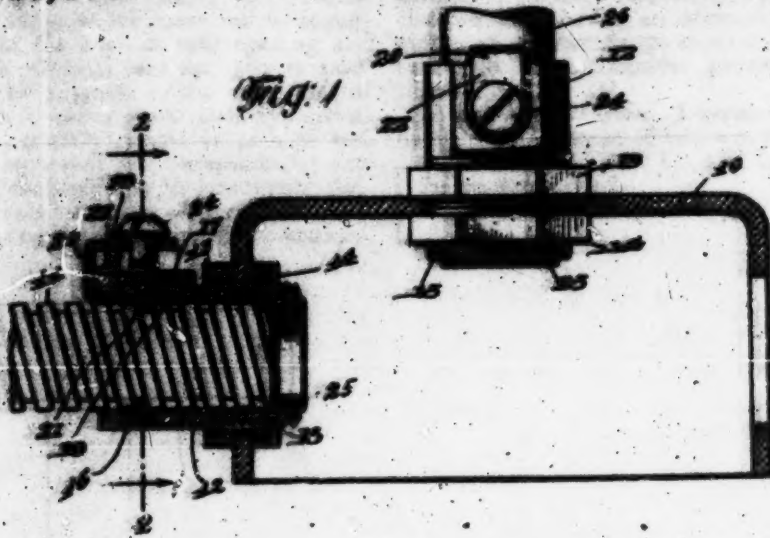


Fig. 2.



Fig. 4.



Fig. 3.

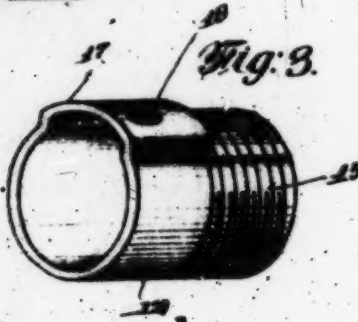


Fig. 5.



Witness

John J. Kitchell

Inventor
LEWIS E. WEBSTER

By

Attorney
Robert Magrane

UNITED STATES PATENT OFFICE.

LEWIS E. WEBSTER, OF WILKES-BARRE, PENNSYLVANIA, ASSIGNOR OF ONE-FIFTH TO WILLIAM BULLOCK, ONE-FIFTH TO CHARLES M. HELFRICH, ONE-FIFTH TO FREDERICK W. EDDY, AND TWO-FIFTHS TO JOHN M. PARRY, ALL OF WILKES-BARRE, PENNSYLVANIA, CO-PARTNERS TRADING UNDER THE NAME OF WEBER MANUFACTURING COMPANY.

JUNCTION-BOX COUPLING FOR ELECTRIC-WIRE CONDUITS.

1,345,077.

Specification of Letters Patent.

Patented Oct. 30, 1917.

Application filed October 14, 1915. Serial No. 33,780.

To all whom it may concern:

Be it known that I, Lewis E. Webster, a citizen of the United States, residing at Wilkes-Barre, in the county of Luzerne and State of Pennsylvania, have invented a new and useful improvement in Junction-Box Couplings for Electric-Wire Conduits, of which the following is a specification.

This invention relates to electric wiring systems, and has particular reference to methods of attaching conduits to outlet or junction boxes.

One object of the invention is to provide a coupler for the box and conduit, simple in structure, cheap to manufacture, and forms a permanent clamp not easily loosened by accident. Another object is to provide a clamp which may be easily applied to the box and in which the conduit is more securely held than in the ordinary forms now in use. Another object is to provide a coupler which permits of more or less adjustment with relation to the interior of the box, so that the coupler occupies a minimum amount of space within the box.

Referring to the drawings:

Figure 1 represents a sectional elevation of an outlet box with conduit attached;

Fig. 2 represents an end elevation and section on the line 2-2 of Fig. 1;

Fig. 3 is a view in perspective of the coupler sleeve;

Fig. 4 is a view in perspective of the coupler jaw;

Fig. 5 is a view in perspective of a clamping nut.

As shown in Fig. 1, the outlet box is indicated at 10. The conduit, which is the usual flexible armor sheath formed of spiral convolutions, having a surface like that of a screw thread, is indicated at 11.

The coupler includes a cylindrical sleeve 12, which is attached to the box, as shown in Fig. 1, by two clamping nuts 13 and 14, which engage a threaded portion 15 of the sleeve. As shown in Fig. 1, this arrangement permits by manipulation of these nuts the extension into the box of the sleeve to any desired extent. The sleeve is provided with a projection 16 adapted to engage between the threads of the conduit, and diametrically opposite this projection is a re-

cess 17, in the center of which is a threaded aperture 18. Within this recess 17 is located one extension 19 of a U-shaped member 20, this extension forming a clamping jaw for the conduit; it is provided with a projection 21 adapted to enter between the threads of the conduit. The upper extension 22 of this member is provided with an aperture 23 through which the clamping screw 24 is freely movable. The clamping screw 24 has a threaded engagement with the aperture 18 of the sleeve and the lower end of the screw bears upon the extension 19 of the jaw directly above the projection 21, the aperture 23 and projection 21 being in register with each other as shown.

In the structure thus described the U-shaped clamp indicated generally at 20 has its member 19 positioned parallel with the conduit. The screw exercises a direct thrust against the jaw, giving a maximum of pressure to the jaw. By means of this parallel positioning of member 19 the bite of the jaw is extended over a considerable surface of the conduit, which is of relatively soft material and the conduit will not be injured therefore, when the screw is turned as far as it will go. In the construction shown, a considerable latitude of movement is allowed the jaw 20, so that the device will handle variable sizes of the conduit. By providing the extension 22, through which the screw 24 passes, the positioning of member 19 parallel with the conduit is assured and a further advantage is that the jaw is always permanently attached to the sleeve, so that it is not necessary to fit these parts together in the work of installation.

An eyelet 25 is provided at the interior end of the sleeve to limit the movement of the conduit into the box or through the sleeve and to provide a rounding and safe edge to prevent abrasion of the insulation.

As shown in Fig. 1, the coupler may also be utilized to attach the box to an ordinary gas fitting, such as the vertical pipe indicated at 26.

I claim:

1. In combination, an outlet box, a conduit, and a coupler for the box and conduit, the coupler including a sleeve to receive the conduit, a clamping screw, a U-shaped jaw,

one extension of said jaw having a projection adapted to engage the conduit between the threads thereof, the second extension having an aperture through which the said screw is freely movable, the screw being in threaded engagement with the sleeve, the said aperture being in register with said projection.

2. In combination, an outlet box, a conduit, and a coupler for the box and conduit, the coupler including a sleeve to receive the conduit, a clamping screw in threaded engagement with the sleeve, a U-shaped jaw, one extension of the jaw extending into the path of the end of the screw to clamp the conduit, and the second extension having a guiding aperture through which the shank of the screw is freely movable.

3. A coupler of the class described comprising a sleeve to receive the conduit having a recess on its inner face at one end thereof, a U-shaped clamp straddling the edge of the recessed end of said sleeve with one extension thereof disposed in said recess and the other extension outside the sleeve and parallel with its longitudinal axis the recessed portion of said sleeve and the outlying extension of the clamp having registering apertures, and a screw extending through the aperture in said clamp and having threaded engagement with the aperture in the sleeve.

4. A coupler of the class described comprising a sleeve to receive a conduit having a recess on its inner face at one end thereof, a U-shaped clamp straddling the edge of the recessed end of said sleeve with one exten-

sion disposed in said recess and the other extending outside the sleeve and parallel with its longitudinal axis, the recessed portion of said sleeve and the outlying extension of the clamp having registering apertures, a screw extending through the aperture in said clamp and having threaded engagement with the aperture in the sleeve, and outlying projections on said sleeve and clamp for engagement with a conduit between the threads thereof at diametrically opposite points.

5. A coupler of the class described comprising a sleeve to receive a conduit, a U-shaped clamp having one extension projecting into the interior of said sleeve, the other disposed over the outside thereof, said outer extension and the adjacent portion of the sleeve having aligned apertures, and a screw extending through the aperture in said extension, and having threaded engagement with the aperture in the sleeve, said outer extension forming a guide for the screw.

6. A coupler of the class described comprising a sleeve to receive a conduit having a recess in its inner face at one end thereof, a U-shaped clamp straddling the edge of the recessed end of said sleeve and one extension thereof disposed in said recess and the other over the outside of the sleeve, said outer extension and the adjacent portion of the sleeve having aligned apertures, and a screw extending through the aperture in the outer extension and having threaded engagement with the aperture in the sleeve, said outer extension forming a guide for said screw.

LEWIS E. WEBSTER

A. CASPER.
CONDUIT CONNECTION.
APPLICATION FILED APR. 17, 1917.

1,979,956.

Patented Sept. 17, 1918.

Fig. 1.

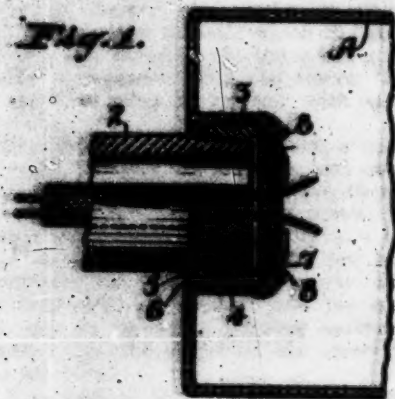


Fig. 2.



Fig. 3.



Fig. 4.



Fig. 5.



Fig. 6.



WITNESSES:

J. C. Kiedner
Julius C. Conrath

INVENTOR

Albert Casper

by Strong & Hunsford

ATTORNEYS

UNITED STATES PATENT OFFICE.

25

ALBERT GARNER, OF VALLEJO, CALIFORNIA, ASSIGNOR OF ONE-THIRD TO WILLIAM W. WHEE, OF VALLEJO, CALIFORNIA.

CONDUIT CONNECTIONS.

1,579,593.

Specification of Letters Patent. Patented Sept. 17, 1918.

Application filed April 17, 1917. Serial No. 122,992.

To all whom it may concern:

Be it known that I, Albert Garner, a citizen of the United States, residing at Vallejo, in the county of Solano and State of California, have invented new and useful Improvements in Conduit Connections, of which the following is a specification.

This invention relates to a conduit connection, and particularly to a bushing to be used in connection therewith.

One of the objects of the present invention is to provide a simple, cheaply manufactured easily applied conduit connection for pipe conduits, particularly such as are employed in carrying insulated wires to or from outdoor boxes, for instance, outlet boxes, service cans, switch cans, cabinet cans, switch-board cans, pull-in cans, or any other like device where a rigid, moisture-proof, grounded connection is required. Another object of the invention is to provide a device of the character described which can be readily connected without the use of lock-nuts, and the like, and which may also serve as a closure for knock-out openings. Another object of the invention is to provide means for supporting an insulating washer to permit separating of incoming or outgoing wires and to prevent grounding or short circuiting of the same. Further objects will hereinafter appear.

The invention consists of the parts and the construction and combination of parts as hereinafter more fully described and claimed, having reference to the accompanying drawings, in which—

Figure 1 is a side elevation, partly in section, showing the preferred form of conduit connection employed.

Fig. 2 is a side elevation of a bushing supporting an insulating ring.

Fig. 3 is a front view of Fig. 2.

Fig. 4 is a similar view, showing an insulating member in the form of a disk having two openings therein to permit separation of the incoming wires.

Fig. 5 is a front view, showing an insulating disk having three openings.

Fig. 6 shows a conduit opening provided with a knock-out disk.

Referring to the drawings in detail, A indicates the casing of an outlet box, service can, switch cabinet, or like device, which is provided with a suitable number of conduit openings or knock-outs to permit the box to

be connected with pipe conduits, such as shown at 2, through which the incoming or outgoing wires are passed.

The present invention comprises the following construction: The metal forming the box, shown at A, is first cut out to form a circular opening, which is then expanded inwardly to form an annular shoulder 3. This shoulder is internally threaded by a tap to permit it to receive a bushing 4. This bushing is threaded both externally and internally, as shown at 5 and 6, respectively, and therefore serves three functions; first, it forms a positive bond or connection between the casing and the conduit pipe; second, it forms a threaded opening for the reception of the pipe; and, third, it serves as a holder and retainer for an insulating ring or disk 7 such as shown in Figs. 1, 2, 4 and 5. Standard pipe tap threads are preferably employed to form a tapering thread both in the annular shoulder and in the bushing. The bushing in this manner serves as a wedge or will, in other words, become slightly expanded from the inside by the pipe and slightly contracted from the outside by the annular, threaded shoulder. The importance of this construction can readily be seen as it permits the different threaded parts to be screwed home and a thorough bond connection produced.

The screwing of the bushing into position within the annular shoulder 3 and the insertion of a pipe is accomplished in one operation; that is, the pipe is first inserted in the opening within the annular shoulder in a position as concentric therewith as possible. The bushing is then inserted from the inside and as the threads will engage both the pipe and the annular flange, it can readily be seen that both connections are made at one time and that it will be impossible to remove the bushing from the exterior as the tapering pipe tap threads employed will not permit it.

The insulating ring or disk employed may be rigidly secured in the inner end of the bushing, if desired, but is preferably loosely and turnably mounted between a plurality of inwardly turned lugs 8, formed on the end of the bushing. These lugs may be cast integral with the bushing or separately secured and may, therefore, be bent over the insulating ring or disk to prevent its accidental removal when once inserted. The

ring or disk may be constructed of porcelain, vulcanized rubber, glass, or any other suitable material, and it may be provided with a single opening, as shown in Figs. 1 and 2, or with several openings, as shown in Figs. 4 and 5. This is of considerable importance as it permits supporting of the wires at the point of admission to the box and it also holds the wires out of contact with any metal floor, thus eliminating grounding or short circuiting of the conductors even though the wires should become shielded or the insulating covering partly removed.

The conductive member 1 may be provided with a recess 2, such as shown in Fig. 3, at its inner end for the reception of a knock-out disk 30 which serves to normally close the conduct opening when it is not required.

A suitable insulation constructed as here shown is not only water and moisture-proof, but it makes it possible to form a more positive ground or bond between the box and the conduit than is otherwise the case. It is also a labor and material saver as it takes the place of the two lead coats and washers heretofore employed and it, furthermore, eliminates tampering without detection when sealed boxes or conduits are employed.

The materials and finish of the several parts of the device are such as the experience and judgment of the manufacturer may dictate.

I wish it understood that various changes in form, proportions and minor details of construction may be resorted to within the scope of the appended claims and that I do not wish to limit myself to the specific design and construction here shown.

Having thus described my invention, what I claim and desire to secure by Letters Patent is—

1. In combination with an outlet box having an opening and an integral interiorly threaded circular flange surrounding the opening, a bushing having interior threads to engage a pipe and having exterior threads

engaging the threads of said flange, said bushing having a series of spaced integral flanges extending longitudinally thereof and disposed beyond the inner end of said flange and having curved inner ends, and an insulating ring supported at its periphery in said ends and having its inner circumference extending beyond the interior of the pipe so as to engage the conduct wires, the interior threaded bore of said bushing being tapered whereby when the pipe is screwed into the bushing the latter will be expanded.

2. In combination with an outlet box having an opening and an interiorly threaded flange surrounding same, a bushing exteriorly threaded and engaged with the threads of said flange and having interior threads to engage the pipe, the inner end of said bushing being formed with a series of spaced flanges extending longitudinally of the bushing and having ends on their inner faces, and an insulating ring supported at its periphery by said flanges so as to be disposed beyond the inner end of the pipe.

3. In combination with an outlet box having an opening and an integral interiorly threaded circular flange surrounding the opening, a bushing having interior threads to engage a pipe and having exterior threads engaging the threads of said flange, said bushing having a series of integral spaced flanges extending out from its inner end, and an insulating ring engaged at its periphery by said flanges and supported thereby, the interior threaded bore of said bushing being tapered whereby when the pipe is screwed into the bushing the latter will be expanded.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

ALBERT CASPER.

Witnesses:

JOHN H. HERRING,
W. W. HEALEY.

May 25, 1926.

1,585,688

C. V. PERRY

END FITTING

Filed June 4, 1924

Fig. 1.

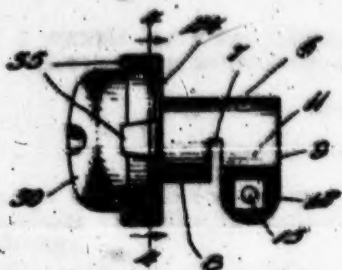


Fig. 2.

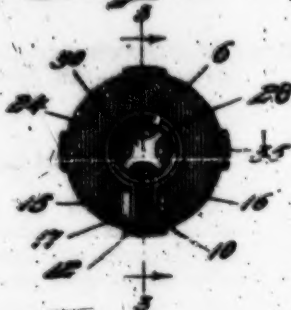


Fig. 3.

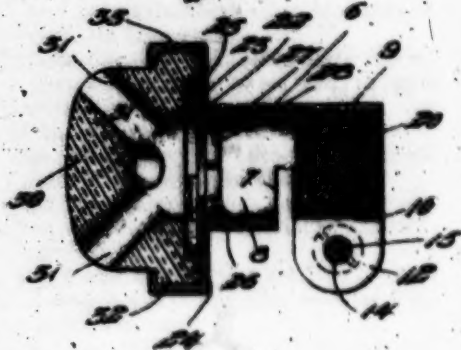


Fig. 4.

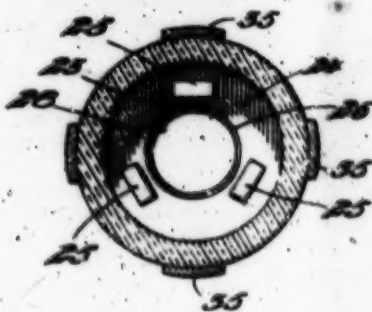
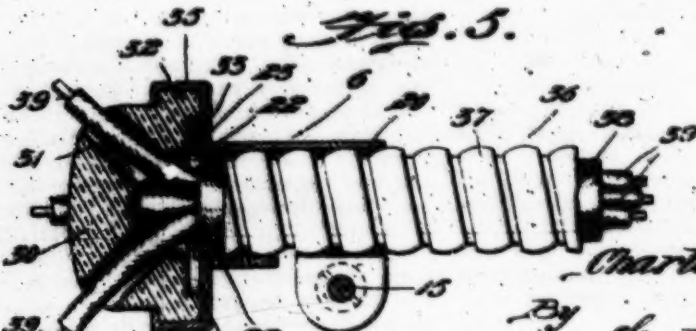


Fig. 5.



Inventor,
Charles V. Perry

By d. E. Perry

Patented May 25, 1926.

1,585,688

UNITED STATES PATENT OFFICE.

CHARLES V. PERRY, OF WEST HAVEN, CONNECTICUT, ASSIGNOR OF ONE-HALF TO LEONARD F. BOSWORTH, OF BARRINGTON, RHODE ISLAND.

END FITTING.

Application filed June 4, 1924. Serial No. 717,727.

My invention relates to end fittings for electrical conduits or cables in distinction from pipe fittings.

The essential objects of my invention, in addition to the ends commonly sought, are to enable the use of the fitting upon a flexible cable or the like without requiring the usual threaded connector; to insure a firm engagement of the fitting with the cable; to prevent injury to wire insulation during installation; and to attain these ends in a simple and inexpensive structure.

To the enumerated ends essentially my invention consists in such parts and in such combinations of parts as fall within the scope of the appended claim.

In the accompanying drawings which form a part of this specification

Figures 1 and 2 are a side and a rear elevation respectively of an end fitting embodying my invention.

Figures 3 and 4, a section on line 3—3 of Figure 2, and a section on line 4—4 of Figure 1 respectively, and

Figure 5, a section of the fitting engaged with the end of a cable taken on a line 3—3 of Figure 2, and showing the cable in side elevation.

In detail my fitting comprises a thin metallic sleeve 6 having an intermediate transverse slot 7 forming a shank portion 8 and an end portion 9, the latter being longitudinally split as at 10 to form a clamping portion having upon its resilient sections 11 parallel projecting ears 12 provided with perforations 14 adapted to receive a clamping screw 15 whose head 16 engages one ear, while a nut 17 thereon engages the other ear. The interior of the clamping portion 9 of the sleeve is provided with knurls 20 or is otherwise roughened. Lugs 22 on the inner end of the sleeve pass through slots 23 in a plate 24 and terminate in bent ends 25 clamping the latter. The slots are radially disposed around a central circular hole 26 in

the plate 24. The hole 26 is of less diameter than the sleeve 6 so that there results an integral inwardly directed flange 27 against which abuts a spring guard ring 28 frictionally engaging the sleeve and serving as a grip for the wires and prevents contact of the insulation with the flange 27, said ring being of greater diameter than the opening through said flange, as seen in Figure 3. The transversely rounded inner periphery of the ring is of less diameter than the hole 26. An insulating head 30 has usual openings 31 and is provided with a lateral peripheral shoulder 32 at its base and has a circular recess 33 in the latter. The head 30 rests on the plate 24 and the shoulder 32 is loosely overlapped by fingers 35 integral with the periphery of the plate.

In Figure 5 is shown a cable or conduit 36 comprising the usual ribbed sheath 37 surrounding the insulation 38 and wires 39. The conduit is clamped by the screw 15 and the resilient sections 11 within the sleeve 8, the knurls 20 assisting in retaining the cable against longitudinal movement in one direction and the flange 27 in the other direction. The ring 28 when present not only guides the wires but protects the insulation from contact with the flange 27. When said ring is absent the flange 27 affords an abutment for the end of the sheath 37.

I claim:—

In an end fitting for cables, a sleeve comprising a shank portion and a longitudinally split clamp portion, a head plate provided with a central opening fixed to the end of the shank portion and forming an internal annular flange, a resilient split guard ring frictionally mounted in the shank portion and abutting against the flange, and an insulating head attached to the plate.

In testimony whereof I have affixed my signature.

CHARLES V. PERRY.

Opinion, Hulbert, D. J.

[SAME TITLE]

BOHLEBER & LEDBETTER, Esqs., Solicitors for Plaintiffs,
15 Park Row, New York City.

WILLIAM BOHLEBER, Esq., and F. H. FASSETT, Esq., of
Counsel.

DARBY & DARBY, Esqs., Solicitors for Defendants, 405 776
Lexington Ave., New York City.

FLOYD H. CREWS, Esq., of Counsel.

There will be a decree:

1. Sustaining the validity of claim #1, and
2. Holding invalid claim #2 of Letters Patent #1,769,
947, and
3. Dismissing the Bill (a) as to contributory infringement,
777 (b) for an injunction, and (c) for an accounting.

The Thomas & Betts Company of Elizabeth, New Jersey, and the National Electric Products Corp., of Pittsburgh, Pa., are New Jersey and Delaware corporations, respectively.

Electrical Fittings Corporation and Joselson Sales Corporation are New York corporations, each having its principal office at 27 Warren Street, New York, N. Y., in this District.

Since the incorporation of the latter in February, 1933, the defendant Samuel Joselson and Belle Joselson, his

wife, have been President-Secretary and Treasurer, respectively, and sole stockholders, and together with Jack Joselson, a brother of Samuel, constituted the board of directors of Joselson Sales Corporation whose assets were acquired and liabilities assumed by the defendant Electrical Fittings Corporation upon its organization about June 7, 1935. Joselson Sales Corporation has not been active since.

779 Samuel Joselson is President-Secretary, Irving Tratter, Vice-President-Treasurer, and together with Edwin J. Schneider, constitute the board of directors of the defendant Electrical Fittings Corporation. Of its outstanding shares of capital stock, Joselson owns one-half and Tratter and Schneider, one-quarter each.

On or about February 15, 1937, Efcor Sales Corporation was organized as a New York corporation. Tratter is President and Secretary, Schneider, Vice-President, and Joselson, Treasurer, and they are all of its directors and own the shares of its capital stock in the same proportion as in the Electrical Fittings Corporation.

780 Schneider and Tratter are connected with the Eastern Tube & Tool Company which manufactures armored cable and fibre bushings and Schneider is the President thereof.

On December 7, 1927, Otto A. Frederickson of Weathersfield, Connecticut, filed an application in United States Patent Office, Ser. No. 238,356 for "armored electric cable" and on October 9, 1928, there was issued to National Electrical Products Corporation, one of the plaintiffs, as his assignee, Letters Patent #1,687,013.

Claims 2, 7, 8, 9 and 10 of this patent were held valid by the Circuit Court of Appeals (Second) in *National Elec. Products Corp. v. Circle Flexible Conduit Co.*, 62 Fed. (2) 996.

Frederickson pointed out that armored cables in use

prior to his patent were open to serious objections; usually they consisted of two or more conductors enclosed in an interlocked covering of insulated material of braided or woven fabric inserted in a spirally wound metallic jacket or sheath which, in commercial use, was cut off some distance from the end of the enclosed conductors in order to make attachments thereof to electrical fixtures. It was further necessary, after cutting the metallic sheath, to sever the interlocked fabric, also by cutting, and injury to the insulation covering the conductor wires was likely to result, or, in any event, the cut end portion of the metallic sheath left burrs or sharp edges liable to penetrate or cut into the insulation, thus creating a short circuit.

782

The important feature of the Frederickson patent consists of an insulated material of a fibrous nature and associated with the end of the cut metallic of the armor, jacket or sheath, is a sleeve or ferrule to be interposed between the insulated conductor and the interior of the metallic sheath, to avoid all cutting action by the sharp edges or burrs.

On or about July 2, 1928, James M. G. Fullman, filed an application in the United States Patent Office, Ser. No. 295,559 for "Connector for Electric Conduits" and Letters Patent #1,769,947 were granted and issued July 8, 1930, to National Metal Molding Co., assignee of Fullman.

783

Prior to the alleged infringement complained of in this action, National Metal Molding Company, by instrument recorded in the Patent Office July 16, 1930, assigned said Letters Patent to National Electrical Products Corporation, one of the plaintiffs herein, which is now vested with the legal title, subject to an exclusive license granted to the Thomas & Betts Company (recorded Nov. 25, 1933) and certain sub-licenses granted by the latter to manu-

facture and sell devices embodying the improved inventions claimed thereunder. These devices are two in number, designated as "set screw" and "clamp" connectors.

In the specification of the patent in suit, Fullman states:

785

"In connecting electrical conduits and armored cables to outlet boxes and other electrical fittings it is usual to cut away the conduit wall or the sheath of the cable and to pass the unsheathed conductors into the box for making the desired electrical connections. In the use of metallic conduits, and particularly in the case of so called flexible metallic armored cable, this leaves a more or less ragged metallic edge which often abrades or cuts into the insulation on the exposed conductors, and is likely to cause short circuits and other injurious effects. In order to shield the exposed conductors from the edge of the cutaway metallic armor it has been proposed recently to provide a bushing of insulating material which can be slipped over the exposed conductors where the armor is cut away, and having a shoulder bearing against the sharp metallic edge of the armor, as shown and described in Letters Patent No. 1,687,013, dated Oct. 9, 1928. (Frederickson Patent) When such a bushing is used at the joint between an armored cable and an outlet box with connectors of the present usual types, it is largely or altogether hidden within the connector, so that its presence is not apparent to an inspector or other observer. The present invention provides an improved connector binding the cable to the outlet box and having means for holding the insulating and protective bushing in place, which will permit the bushing to be visible and thus permit ready inspection of the system."

786

The claims in suit are:

"1. The combination with an armored cable, of a bushing of insulating material having a tubular barrel portion contained within the cable armor and a shoulder bearing against the end of the armor, and a connector and means for securing it to the cable, said connector having a portion projecting beyond the end of the cable armor and having inwardly projecting fingers adapted to bear upon the bushing shoulder and retain the bushing in place.

788

"2. The combination with an electrical conduit, of a bushing having a tubular barrel portion contained within the conduit and a shoulder bearing against the end of the conduit, and a connector and means for securing it to the conduit, said connector having means for retaining the bushing in place while leaving it visible to ocular inspection."

There was offered in evidence (Plaintiffs' Ex. 17) a type of set screw connector conceded to have been in use for many years and of which the set screw type of plaintiffs' connector is a counterpart in every particular except one and in that respect the improvement constitutes the basis of the claimed invention.

789

The connector is a metallic tube which has a screw or a clamp at the base and a circular threaded head which snugly fits into a circular opening of an outlet box. The armored cable passes through the connector which is then fastened to it on the outside of the outlet box by the set screw (or clamp) and is further made fast on the inside by screwing on a locknut. In the old type of connector, the fiber bushing which was put over the sheath of, and between the connector, and the armor cable, before the

730

Opinion, Hulbert, D. J.

locknut was screwed on, was not at all times visible because the diameter of the mouth of the connector is somewhat less than that of the barrel of the connector itself and the insulated wires passing through the mouth fitted it snugly.

791

In the plaintiff's invention the rim at the mouth is cut down in three places so that the remaining portions project inwardly like "fingers" as the plaintiff, in fact, designates them, adapted to bear upon the bushing shoulder and retain the bushing in place. The fiber bushing, usually of red color, may be seen through the space between the fingers called "peep holes." The "clamp" connector differs somewhat in construction from the "set screw" but that difference is not of any real materiality in the consideration and disposition of the issues here involved.

The National Electrical Code containing "Regulations of the National Board of Fire Underwriters for Electric Wiring and Apparatus" approved by American Standards Association, effective Nov. 1, 1933, contains the following provision:

792

"ARTICLE V—Section 505—Armored cable.

(a) Approved armored cable, types AC or ACL may be used as the wiring method, if the provisions of the following paragraphs of this section are observed.

(e) Approved outlet boxes or fittings shall be installed at all outlet and switch points as provided in paragraph (a) of section 512. The cable shall be continuous from outlet to outlet, or from fitting to fitting, and the armor shall be mechanically and electrically connected to all fittings in a manner to sub-

stantially close the openings at entrance points and to hold the cable securely.

(g) At all points where the armor terminates an approved fitting shall be provided to protect wires from abrasion, unless the design of the outlet boxes or fittings required by paragraph (e) of this section is such as to afford equivalent protection, and in addition, an approved insulating bushing or its equivalent approved protection shall be provided between the conductors and the armor. The connector or clamp by which the armored cable is fastened to boxes or cabinets shall be of such design that the insulating bushing or its equivalent will be visible for inspection."

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Section 512, provides:

"(a) At each outlet, switch, or junction point of conduit, surface metal raceway, armored cable, electrical metallic tubing, or non-metallic sheathed cable, and at each outlet and switch point of concealed knob-and-tube work, an approved box shall be installed. At least six inches of free conductor shall be left at each outlet for the making up of joints or the connection of fixtures except where conductors are intended to loop through sockets, receptacles and similar devices without joints."

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The National Electrical Code, effective Nov. 1, 1935, modifies the foregoing quoted provision by changing the designation of paragraph (g) to (d) and adds the following sentence:

"This bushing will not be required with lead covered cables."

Plaintiffs' counsel, during the trial, and in their brief, stressed as one of the important elements supporting the patent in suit, the visibility of the red bushing through the peep-hole openings of the connecter, but it was not until after the plaintiff National Electric Products Corporation had acquired the patent rights of Fullman that the regulations of the National Board of Fire Underwriters were adopted, upon which the plaintiffs' counsel now further emphasizes the importance of that element.

797 Defendants cite in their answer to the bill of complaint, 22 patent exhibits. In their bill of particulars it is stated that they would rely upon all of those thus listed to show the state of the art and anticipations, and subsequently, they gave formal notice that three additional patents would be relied upon, making a total of 25. On the trial, however, only ten were put in issue, of which 6 were considered by the Patent Office during the prosecution of the application, which eventuated into the patent in suit.

798 A careful analysis of the patents of Fullman, #1,769,947; Frederickson, #1,687,013; Goehst, #681,416; Klein, #799,989; Freeman, #848,819; Hinsdill, #849,395; Gilbert, #949,628; Appleton, #1,192,150; Webster, #1,245,077; Casper, #1,279,256 and Perry, #1,585,688, has been made and the results are shown upon schedules appended hereto. All of them claim a bushing and visibility thereof. There are only two or such patents which need be discussed in any detail.

Specifically the extended elements of Casper do not bear upon, and they do not retain the bushing in place, such retention being indicated by threaded members between the bushing and a flange of the box wall. Further, the bushing in the Casper device does not bear upon the armored cable but upon a conduit which is not an element of the first claim of the Fullman patent.

In the Perry device the bushing is exterior of the ar-

mored cable and has a plurality of fingers extending away from the cable which do not bear upon the cable, thus these fingers are a part of the bushing and not a part of the connector.

While the other elements of Claim #1 in suit may be found separately in the defendants' exhibit patents, in none of them is found the particular type of fingers having the double function of bearing upon the bushing and retaining the bushing in place; in fact, fingers are not found in defendants' exhibit patents having either one of these functions.

As the mechanical construction of these fingers is different from those of the exhibit patents and as they perform functions not found in those patents, the Court is of the opinion that they are more than a simple mechanical change from the prior art and that they exhibit an exercise of an inventive thought, and that, therefore, claim #1 is valid.

Claim #2 of the patent in suit, is broader than claim #1. It contains no reference to a connector having fingers but refers to "a connector," "means for securing it to the conduit" and "means for retaining the bushing in place" all of which elements are found broadly in the exhibit patents. This claim includes also an electrical conduit, which is found in the patents of Goehst, Hinsdill, Gilbert and Casper—the other patents omitting this element.

The Gilbert device includes practically all of the elements of this claim; while the Klein and Freeman devices do not include a conduit, they have otherwise the elements of the claim.

One of the elements of this claim is the visibility of the bushing (not mentioned in claim #1).

Having in mind the exhibit patents and the breadth of description of the elements of this claim, the Court is

of the opinion that it would require but ordinary mechanical ability to produce the device of the claim with a knowledge of the prior art, and that claim #2 is invalid.

The defendants contend that the only difference between the set screw connector in use for many years, and that shown in the patent in suit, is the fingers projecting inwardly and the little niches in the mouth, which are such trivial modifications that it does not amount to invention.

803

The widespread commercial success of a patented invention as indicated by its general acceptance throughout the trade, is a motivating factor in resolving any doubt of the novelty and patentability of the device.

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It is conceded by plaintiffs that they do not seek to have the claims in the Fullman patent given a construction broad enough to prevent anyone from using old and unpatented bushings, cables or conduits, with the peep-hole connectors furnished by the plaintiffs or their authorized licensees which, of course, they could not do. (*Bassick Mfg. Co. v. R. M. Hollingshead Co.*, 298 U. S. 415.) There is no proof in this case that any effort has been made to effect price control. The plaintiffs' connectors are not, in my opinion standard articles of commerce. There is no evidence in this case that commercial success was due to unusual promotion efforts. National Electric Products Corporation is only a nominal plaintiff having granted to Thomas & Betts Company, as exclusive licensee, the right to sue and "to retain for its sole use and behoof any damages or royalties collected as a result of any such suit."

The bill of complaint alleges contributory infringement. Sub-licenses were granted by the plaintiff to:

M. B. Austin Company of Chicago, Ill.;

The Rattan Manufacturing Company, New Haven, Conn.;

Andrew Perry Company, Terryville, Conn.;

Kwikon Company, Chicago, Ill.;

Bridgeport Switch Company, Bridgeport, Conn.;

Appleton Electric Company, Chicago, Ill.;

Steel City Electric Company, Pittsburgh, Pa.;

Conduit Fittings Corporation, Chicago, Ill. (Who succeeded the Chicago Steel Tank Company of that city which had a license under the patent at one time);

806

Reco-All Steel Co., South Bend, Ind. (Succeeded the All Steel Equipment Company of Aurora, Ill., and the Appleton Manufacturing Company of South Bend, Ind., both of whom had licenses at one time).

A license was also issued to the Sterling Manufacturing Company "to manufacture and sell the connectors" under the patent in suit. The license provided in paragraph 11:

"* * * nor shall the acceptance of royalty payments after breach or notice of termination preclude the exercise of any right of the Licensor hereunder. The termination of this agreement, either by cancellation or otherwise, shall not release the Licensee of any obligations accrued hereunder to the date such termination becomes effective, either for the payment of royalties or otherwise."

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Paragraph 4 of the license contract, provides:

"4. The Licensee covenants and agrees to pay to the Licensor, or to the order of the Licensor, five

per cent. (5%) of all sales of Connectors made hereunder, * * * on or before the twentieth day of the next succeeding calendar month after each quarter, during the continuance of this agreement * * *. Each quarterly payment is to be accompanied by a verified statement from the Licensee to the Licensor setting forth the number of pieces of each size and type of Connectors sold during the preceding quarter and the net selling prices thereof."

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The Thomas & Betts Company, since its organization in 1917, has been engaged in the manufacture and sale of small electrical specialties and fittings for the installation of electrical work in buildings, including these connectors manufactured under the patent in suit, and bushings.

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From March 1, 1932, up to and including the month of October, 1937, plaintiff Thomas & Betts Company manufactured and sold approximately 19,613,377 connectors; plaintiff, National Electric Products Corp., has manufactured and sold approximately 6,400,000 connectors, and the licensees of Thomas & Betts Company, during such period as they have been licensed, manufactured and sold approximately 44,353,892 connectors, making a total of 70,377,000; the gross selling price of which is in excess of \$1,500,000.

The total number of connectors of all kinds sold throughout the United States during said period does not appear in the evidence, but the defendant Jcnelson testified that, while the customers who purchased connectors from him did not ordinarily specify the character of connector desired, approximately 90% of all of the connectors sold by the defendants were of the type manufactured under the patent in suit.

The connectors manufactured and sold by the plaintiff

National Electric Products Corporation bore upon each device the word "Patent." The devices manufactured by the plaintiff Thomas & Betts Company were not so marked, but Mr. McMurtrie testified the containers were marked and there is in evidence a label which he stated was affixed to each box of containers bearing the legend "Pat. July 8, 1930, No. 1,769,947." He further testified that he did not know what practice had been followed by the sub-licensees of his company but there was introduced in evidence by the defendants a label showing a cut of a set screw connecter and the words "Made in U. S. The Thomas & Betts Co., Elizabeth, N. J." and the reference "Cat. No. 240 V" but no specific mention of the patent in suit.

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It also appears from a list of inspected electrical appliances published (May 19, 1937) by Underwriters Laboratories, Inc., sponsored by National Board of Fire Underwriters, that those of the plaintiff's sub-licensees listed had their own individual markings. Also, that Eastern Tube & Tool Company, Inc., Brooklyn, N. Y., National Electric Products Co., Pittsburgh, Pa., and Walker Bros., Conshohocken, Pa., were among some 23 manufacturers of armored cable and that Thomas & Betts Company are among some 15 manufacturers of connectors so listed.

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This action was commenced October 5, 1935. It is contended by the defendants that the service of the bill of complaint was the first notice which they ever had of the plaintiffs' claim of their alleged infringement.

Immediately after the service of process, the defendant Joselson visited the office of the plaintiff's attorney and was shown two connectors which, he testified, he recognized as having been made, one by the Steel City Electric Company, and the other by the Chicago Steel Tank, now the Conduits Fittings Corporation (both licensees of the

plaintiff) but he was unable to state whether he sold this particular connector to the jobbers because the manufacturers also sold to the jobbers direct. However, that testimony indicates to the Court that the defendants did not try to excuse the purchase and use of connectors made by Sterling as having been purchased from Steel City and Chicago Steel Tank. Mr. Joselson claims that at the same interview, he was told by plaintiffs' attorney that the Sterling license had been cancelled, which, he asserts, was his first knowledge of that fact, and that since that time he has not purchased any connectors of the kind manufactured under the patent from any manufacturer not listed in the bill of complaint as a licensee.

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The defendants' answers to interrogatories specify the connectors which the defendants admit having purchased: the defendant Joselson Sales Corporation admits purchases from Sterling in February, March, October, November and December, 1933; January, February, March, May, June and July, 1934; from Appleton Electric Company, August, September, October, November and December, 1934, and March, 1935; from Chicago Steel Tank Company, November and December, 1934, and from Steel City Electric Company, April, May and June, 1935. Defendant Electrical Fittings Corporation admits purchases from Steel City Electric Company in July, August, September and October, 1935.

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Plaintiffs' answers to interrogatories set forth that all of the companies from whom these connectors were purchased were licensed under the patent in suit but that the Sterling license, which was issued February 8, 1932, was cancelled on May 10, 1933. It does not appear when Sterling ceased to manufacture or what stock it had on hand on May 10, 1933.

Moreover, plaintiffs' motion for a bill of particulars contains a waiver of any charge of infringement on any

of the connectors the defendants admit buying, except those bought from the Sterling Manufacturing Company by the defendant Joselson Sales Corporation subsequent to May, 1933.

Therefore, in the last analysis, the issue is whether Joselson, or the corporate defendants, purchased connectors from Sterling with reasonable cause to believe that the Sterling license had been cancelled prior thereto.

Upon that issue the Court is not persuaded that the plaintiff has sustained the burden of proof. It may very well be that when the Sterling Company was retiring from business, as the evidence shows that it did, it had on hand a substantial quantity of connectors manufactured under its license and that the defendants stocked up to meet the requirements of customers for a considerable time thereafter. Certainly, there is no claim since July, 1934, upon which the Court could base an injunction, although purchases were thereafter made during a period of 15 months prior to the commencement of suit. Infringement there may have been as to purchases from Sterling, but the proof is insufficient to justify a direction for an accounting and the appointment of a special Master to take proof of damages.

If a more formal compliance with the provisions of Equity Rule 70½ is desired, submit findings of fact and conclusions of law upon notice of five days.

Dated, N. Y., March 22, 1938.

HULBERT,
U. S. D. J.

Opinion, Hulbert, D. J.

CLAIM #1

	FULLMAN	FREDERICKSON	GOEHST	KLEIN	FREEMAN	HINDSILL	GILBERT	APPLITON	WEBSTER	CASPER	FRANK
Armored cable	x	x	x	x	x			x	x		1
Bushing	x	x	x	x	x	x	x	x	x	x	1
Insulated material	x	x	x	x	x						
Having tubular position	x	x	x	x	x		x	x	x	x	1
Contained within the armor	x	x		x	x						
A shoulder	x			x	x		x	x	x	A	1
Bearing against end of armor	x			x					x	A	
Connector	x		x			x	x	x	x	x	1
Portion projecting beyond end of armor	x			x				x	x	x	1
Inwardly projecting fingers	x										
Adapted to bear upon bushing shoulder	x										
and retains bushing in place	x										
Visibility of bushing (not in claim)	x	x	x	x	x	x	x	x	x	x	1

Key: A. Shoulder is not an integral part of bushing but is a separate element.

B. The extended lugs are not an integral part of the connector, but are carried there and they do not retain bushing in place.

C. Armored cables but no separate conduit.

D. The fingers do not bear upon the bushing but upon the outside plate of box and they do not retain the bushing in place.

Opinion, Hulbert, D. J.

CLAIM #2	FULLMAN	FREDERICKSON	GOEUST	KLEIN	FREEMAN	HINDSILL	GILBERT	APPLETON	WEBSTER	CASPER	PERRY
ical conduit	x	C	x	C	C	x	x	C	C	x	C
ng	x	x	x	x	x	x	x	x	x	x	x
ular position	x	x	x	x	x	x	x	x	x	x	x
thin conduit	x	x		x	x						
oulder	x			x	x		x	x	A		x
earing against end of conduit	x			x			x		A	B	
s for securing bushing to conduit	x		x	x	x	x	x	x	x	x	x
eter	x		x	x	x	x	x	x	x	B	x
ing means for retaining bushing in place	x		x	x	x	x	x	x	x	x	x
ing bushing visible	x		x	x	x	x	x	x	x	x	x

A. Shoulder is not an integral part of bushing but is a separate element.

B. The extended lugs are not an integral part of the connector, but are carried thereby they do not retain bushing in place.

C. Armored cables but no separate conduit.

D. The fingers do not bear upon the bushing but upon the outside plate of the and they do not retain the bushing in place.

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Final Decree.

At a stated term of the District Court of the United States for the Southern District of New York, held in the United States Court House, Borough of Manhattan, N. Y., on this 27th day of April, 1938.

Present:

HONORABLE GEORGE MURRAY HULBERT,
United States District Judge.

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[SAME TITLE]

828

This cause came on to be heard at final hearing on December 14, 1937, upon plaintiffs' bill of complaint and the answer filed on behalf of the defendants and the proofs adduced on behalf of the respective parties, and counsel for the respective parties having filed briefs, and the same having been duly considered by the Court, and it appearing that the Court is not persuaded that plaintiffs have sustained the burden of proof of contributory infringement as charged in the bill of complaint, and a petition of defendants for a rehearing having been filed, argued by counsel for the respective parties, considered by the Court and on April 23, 1938 denied, it is hereby

ORDERED, ADJUDGED and DECREED, as follows:

1. That James M. G. Fullman was the original, first and sole inventor of connector for electrical conduits described and claimed in claim 1 of U. S. Letters Patent No. 1,769,947, in suit herein.
2. That National Electric Products Corporation, plaintiff, a corporation organized and existing under and by

the of the laws of the State of Delaware is, by virtue of mesne assignments from said James M. G. Fullman, who is vested with the legal title to said Letters Patent No. 1,769,947, subject to an exclusive license granted to The Thomas & Betts Co., plaintiff, a corporation organized and existing under and by virtue of the laws of the State of New Jersey and certain sub-licenses granted by the latter to manufacture and sell devices embodying the inventions claimed therein.

3. That claim 1 of U. S. Letters Patent No. 1,769,947 is good and valid in law, and that claim 2 of said Letters Patent is invalid; and that the bill of complaint herein be and hereby is dismissed (a) as to contributory infringement, (b) for an injunction, and (c) for an accounting. 830

HULBERT,
U. S. D. J.

Copy received and approved as to form April 26, 1938.

DARBY & DARBY, 831
Attorneys for Defendants.

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832

Stipulation.**UNITED STATES DISTRICT COURT,
SOUTHERN DISTRICT OF NEW YORK.**

[SAME TITLE]

833

IT IS HEREBY STIPULATED by and between counsel for the respective parties that the opinion of the Court in this cause may be taken as full compliance with the provisions of Equity Rule 70^{1/2} as findings of fact and conclusions of law.

BOHLEBER & LEDBETTER,
Attorneys for Plaintiffs.

DARBY & DARBY,
Attorneys for Defendants.

Dated: New York, New York, April, 1938.

834

IT IS SO ORDERED.

HULBERT,
U. S. D. J.

April 27, 1938.

Defendants' Petition for Rehearing.**UNITED STATES DISTRICT COURT,****SOUTHERN DISTRICT OF NEW YORK.**

[SAME TITLE]

The defendants, through their attorneys, Darby & Darby, hereby respectfully petition this Court for a rehearing with respect to that portion of its opinion holding claim 1 of the patent in suit valid.

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The grounds on which rehearing is asked are the following:

1. The patent in suit bases its claim for novelty *entirely* on the visibility of the bushing.

Since the Court found that claim 1 is not restricted to the structure in which the pushing is visible, the claim should be held invalid as broader than the disclosure:

2. The Court held on page 9 of the opinion that the extended elements of Casper 1,279,256 "do not bear upon, and they do not retain the bushing in place, such retention being indicated by threaded members between the bushing and a flange of the box wall. Further, the bushing in the Casper device does not bear upon the armored cable but upon a conduit which is not an element of the first claim of the Fullman patent."

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It is believed that the Court has misconstrued the structure of the Casper patent due to the language used in that patent. In the Casper patent the element 4 is clearly and definitely a connector as that work is used in the patent in suit, and was used throughout the trial,

although the Casper patent refers to it as a bushing. Clearly also in the Casper patent the element 7 is a bushing as that word is used in the patent in suit, and was used throughout the trial, although the Casper patent refers to it as "an insulating ring or disc." Considering the element 4 as a connector and the element 7 as a bushing, which they are as these terms are used in the patent in suit, it is clearly seen from the Casper patent that the fingers 8, which are substantially identical with the fingers of the patent in suit, bear upon the bushing 7, and retain it in place. In fact Figure 2 of the patent in suit is identical with Figure 3 of the Casper patent, and Figure 5 of the patent in suit is identical with Figure 2 of the Casper patent, in so far as these fingers and their relation to the bushing are concerned.

In discussing the Casper patent the Court also drew a distinction between a conduit and an armored cable. The patent in suit expressly states, beginning at page 1, line 98—

"It will be understood that the specific form of the connector may be varied, and it will also be understood that while the invention is of particular advantage in the use of flexible metallic armored cables, it may be used to advantage in the installation of electrical conduits of other forms."

Thus it is seen that the patentee made no distinction between armored cable and conduit so far as his patent was concerned. Also, the prior art patents put in evidence almost without exception refer to conduit and armored cable interchangeably, and Webster No. 1,245,077, shows an identical set screw connector used with both.

Applying the well known doctrine that that which in-

fringes if later anticipates if before, it is thus seen that the Casper patent discloses a peep-hole connector having fingers which perform the identical functions of the finger of the connector of the patent in suit, and perform these functions in an identical manner in combination with other structure which is admitted by the patentee to be equivalent structure.

3. The Court further found on page 11 that there is no proof in this case that any effort has been made to afford price control, and that therefore the widespread commercial success of the patent was a motivating factor in resolving any doubt of its novelty and patentability.

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The Court apparently overlooked the license agreements entered into by the plaintiff Thomas & Betts Co., with its licensees, as admitted in the plaintiffs' answers to interrogatories verified April 13, 1936, defendants' Exhibit D. A copy of one of these license agreements was a part of said Exhibit and it contains the following provisions:

"5. The licensee agrees that it will offer for sale and sell the Connectors covered by this license only at such minimum prices and on such terms and conditions and in such manner, whether on consignment or not and whether directly or through agents, or both, and if through agents, or both, only pursuant to such form of agents' agreement, as may from time to time be fixed, adopted and followed by the Licensor. The Licensor shall send to the Licensee by registered mail a net price sheet for Connectors, showing such net selling prices, terms, conditions and manner of sale and stating the date on which such prices, terms and conditions and manner of sale shall become effective. After that date the Licensor and Licensee

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shall not offer for sale to sell Connectors at lower prices and/or upon terms or conditions or in a manner other than those so fixed by the price sheet. Whenever a change is made by the Licensor in the selling prices or terms or conditions of the price sheet, or in the manner of selling, the Licensor shall send to the Licensee by registered mail or by telegraph notice of such changes, stating the date when such changes shall become effective. After the date so fixed the Licensor and Licensee shall not offer for sale or sell Connectors at lower prices and/or upon terms or conditions, or in a manner or under a form of agreement with agents, which vary in any manner from those so fixed.

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6. The Licensor and the Licensee further covenant and agree that neither of them will directly or indirectly grant any rebates, split any commissions, and/or give any secret refunds, concessions, or inducements of any kind with respect to Connectors or other articles which would have the effect of reducing the selling prices, changing the dates of settlement or changing or increasing the discounts or changing the terms or conditions of sale, or change the manner of selling, from time to time fixed by the Licensor. The Licensor and Licensee also agree that they will not grant long term credits, give extended datings, allow cash settlement discounts on notes or trade acceptances from purchasers or otherwise.

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7. The Licensor may at any time or times at its option send by registered mail to the Licensee a list or lists of approved purchasers of Connectors and stating the date on which such list or lists shall be deemed to take effect. The Licensor may thereafter

from time to time add or remove names from such list of approved purchasers, and in any of such events the Licensor shall notify the Licensee by registered mail of such additions, or removals, stating the date when same shall take effect. The Licensor and Licensee covenant and agree that they will offer for sale or sell Connectors only to persons whose names shall at the time appear on said list or lists and to such persons only in accordance with the preceding two paragraphs. The Licensor may at any time or times and from time to time cancel and or withdraw said lists in whole or in part by sending by registered mail notice of such whole or partial cancellation, and or withdrawal to the Licensee. Subsequent to any such total or partial withdrawal and or cancellation the Licensor may from time to time and at any time or times reinstate said lists in whole or in part."

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It is thus seen that the plaintiffs not only exercised the most rigid price fixing in their commercial exploitation, but also followed the vicious practice of using the patent to dictate to the industry who would and who would not be permitted to do business in connection with that industry.

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The Court said on page 10 of its opinion—

☛ It is conceded by plaintiffs that they do not seek to have the claims in the Fullman patent given a construction broad enough to prevent anyone from using old and unpatented bushings, cables or conduits, with the peep-hole connectors furnished by the plaintiffs or their authorized licensees which, of course, they could not do. (*Russell Mfg. Co. v. R. M. Hollingshead Co.*, 298 U. S. 415)."

It is seen from paragraph 7 quoted above from the plaintiff license agreements, that they are attempting to use the patent in suit along with other patents under their control to do what amounts to exactly this. They arrogate to themselves the right arbitrarily, and capriciously if they choose, to blacklist anyone, and completely shut off his source of supply of these unpatented connectors, regardless of the use to which they are to be put.

851

This is clearly an attempt unlawfully to extend the patent monopoly, such as was directly condemned by the Supreme Court since this case was tried. On January 3, 1938, in the case of *Leitch Mfg. Co., Inc. vs. The Barber Co., Inc.*, 36 U. S. Pat. Q. 35, the Supreme Court said:

852

"The Court held in the *Carbice* case that the limitation upon the scope or use of the patent which it applied was 'inherent in the patent grant.' It denied relief, not because there was a contract, or notice held to be inoperative, but on the broad ground that the owner of the patent monopoly, ignoring the limitation 'inherent in the patent grant,' sought by its method of doing business to extend the monopoly to unpatented material used in practicing the invention. By the rule there declared *every use of a patent as a means of obtaining a limited monopoly of unpatented material is prohibited*. It applies whether the patent be for a machine, a product, or a process. It applies whatever the nature of the device by which the owner of the patent seeks to effect such unauthorized extension of the monopoly. Nothing in *Leeds & Catlin Co. v. Victor Talking Machine Co.* 213 U. S. 325, limits it."

At the trial the defendants proved eleven uses for these unpatented connectors other than to complete the

patented combination. ~~None~~ of these was disputed, the only dispute being whether the combination was ever completed in the *particular manner* covered by the patent, that is, with the flange of the bushing *inside* the peep-holes. In spite of this the plaintiff under its license agreements is in a position to blacklist defendants, and prohibit entirely their purchase of any of these connectors, and therefore prevent their use for any purpose whatever.

It is therefore respectfully prayed that the Court will reconsider its decision and hold claim 1 invalid.

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Respectfully submitted,

DARBY & DARBY,
Attorneys for Defendants.

We hereby certify that we have read the foregoing petition for rehearing and that in our opinion it is well founded and presents grounds whereon rehearing ought to be granted, and we further certify that it is not intended for purposes of delay, and that all matters of fact therein represented and not appearing of record are true.

855

DARBY & DARBY,
Attorneys for Defendants.

Dated: New York, N. Y., March 30, 1938.

856

**Stipulation Concerning Extracts from the Minutes of Oral
Proceedings on Defendants' Petition for Rehearing.**

UNITED STATES DISTRICT COURT,

SOUTHERN DISTRICT OF NEW YORK.

[SAME TITLE]

857

IT IS STIPULATED between the attorneys for the parties hereto, subject to the approval of the Court, that the following is a true and correct transcript of the record of the District Court on the rehearing of the above-entitled matter (certain portions having been eliminated by agreement) and may be treated and considered as the record of the rehearing of said cause in making up the transcript of the record on appeal.

BOHLEBER & LEDBETTER,
Attorneys for Plaintiffs.

858

DARBY & DARBY,
Attorneys for Defendants.

IT IS SO ORDERED.

ROBERT P. PATTERSON,
U. S. D. J.

Dated: New York, New York., August 12th, 1938.

**Extracts from the Minutes of Oral Proceedings Before
Hon. Murray Hulbert, D. J., on April 23, 1938, on
Defendants' Petition for Rehearing.**

859

The Court: This is a hearing on the petition of the defendants. You may proceed.

Mr. Crews: During my argument I will refer to some of the patents in the book of patents which is Exhibit M. My first point in connection with this petition, your Honor, is that the visibility of the bushing through the connector represents whatever there is of invention in the patent in suit. That is, the whole point of the patent is visibility.

With respect to the question of price control, I quoted in my request for rehearing paragraphs 5 and 6 of the plaintiff's license agreements.

860

The Court: Where was that issue raised on the trial?

Mr. Crews: We raised it through the interrogatories. We propounded interrogatories to get their license agreements out of them. They were supplied from the copy of the agreement.

The Court: Was anything said about it on the trial at all?

Mr. Crews: I mentioned it in my opening, yes, your Honor, and furthermore Judge Chase in his dissenting opinion in the case of National Electric v. Cirele on the Frederickson patent which involved the same elements held that there was price-fixing in connection with that.

861

To sum it all up I think the situation is that the connector itself is unpatented and unpatentable. In all it is shown in the Casper patent, fingers and all. The defendant wants to know where it stands. If this patent is held invalid we will know. Otherwise we may be blacklisted under their agreement.

Under the recent decision in the Barber case and the Lincoln Engineering case the Supreme Court has set its foot down very strongly on any monopoly beyond any-

862 *Extract From the Minutes of Oral Proceedings Before
Hon. Murray Hulbert, D. J., on April 23, 1938,
on Defendants' Petition for Rehearing.*

thing that is covered in the patent, and the attempt to stop us from manufacturing or selling these connectors would be a clear extension of the patent monopoly under those decisions of the Supreme Court. Thank you.

863 Mr. Fassett: * * * About price-fixing, there is nothing mysterious about that word. If this is a valid grant, the patentee or his exclusive licensee has a perfect right to fix the prices. At the outset I would like to refer to the case of *E. Bement & Sons v. National Harrow Company*, decided by the Supreme Court, 186 U. S. page 70. In that case Mr. Justice Peckham speaking of a patentee and quoting from the case of *Heaton-Peninsula Button-Fastener Co. v. Eureka Specialty Co.*, 77 Fed. 288, 294 said:

864 The Court: Mr. Fassett, so far as I am concerned there is no purpose or intention on my part to make any distinction of what the law is and has been with respect to the rights of a patentee. My point was, and it is the only reference that I made in the opinion to it, and while as Mr. Crews states in his opening he made some reference to the question of price control, the opening is for the purpose of indicating to the Court what it is expected will be proven in the course of a trial, and during the course of the trial there was no proof offered and there was no discussion on the subject of price control as I recall it. But there was in the brief a reference to this opinion of Judge Chase in the case tried before Judge Galston over in Brooklyn and it was pointed out, of course, that it was a dissenting opinion. But that case did not turn on that point in the Circuit Court of Appeals at all. I felt that the question of price control was not one of the issues that had been raised in the trial before me.

Extract From the Minutes of Oral Proceedings Before 865
Hon. Murray Hulbert, D. J., on April 23, 1938,
on Defendants' Petition for Rehearing.

Mr. Crews: I offered the answers to the interrogatories and I haven't raised any question ~~as to the~~ legality of price-fixing.

The Court: I realize that. That is my reason for the interruption of Mr. Fassett's reading of those citations. The question of legality of price-fixing is not the question. At any rate it was not argued before me.

.

Mr. Bohleber: Your Honor, I move you that this petition be denied. It is simply a rehash of what has been gone through on the trial and what has been gone through in the briefs. The briefs were very carefully considered. There is no use of delaying this case any longer. 866

The Court: Of course, the existence of the Circuit Court of Appeals and the large amount of business which is disposed of up there not only justifies its existence but establishes the fact that District Court Judges are often wrong. I thought I understood the facts in this case, which incidentally I thought was very well tried, and I gave a great deal of patience and consideration to the case after submission. You can't always interpret the law as it is written even by the Appellate Courts with the same eyes and with the same trend of thought. I feel now after hearing counsel as I felt when this case was decided that the Court had made a decision in accordance with its lights and I still feel the same way about it. It may be that I am wrong and I should not be surprised any more in this case than in any other if I were. But I feel that this application must result in the denial of the petition and the approval of the decree which has been presented unless it is desired to have the Court consider the counter decree. 867

868

Petition for Appeal.**UNITED STATES DISTRICT COURT,****SOUTHERN DISTRICT OF NEW YORK.**

[SAME TITLE]

869

The above-named defendants, feeling themselves aggrieved by the final decree made and entered in the above-entitled cause on or about the 26th day of April, 1938, hereby do appeal from said final decree to the United States Circuit Court of Appeals for the Second Circuit, for the reasons set forth in the assignment of errors filed herewith, and they pray that their appeal be allowed and that citation be issued as provided by law, directed to the above-named plaintiffs, The Thomas & Betts Co. and National Electric Products Corporation, commanding them to appear before the United States Circuit Court of Appeals for the Second Circuit to do and receive what may pertain to justice to be done in the premises, and that a transcript of the record, proceedings,

870

and documents upon which said decree was based, duly authenticated, be sent to the United States Circuit Court of Appeals for the Second Circuit.

DARBY & DARBY,
Solicitors for Defendants.

Dated: New York, N. Y., June 28, 1938.

Order Allowing Appeal.

At a Stated Term of the District Court of the United States for the Southern District of New York, held in the United States Court House, Foley Square, in the Borough of Manhattan, City and State of New York, on the day of June, 1938.

Present:

HON. GEORGE MURRAY HULBERT,
United States District Judge.

872

[SAME TITLE]

The defendants, having presented their petition for appeal herein, it is ordered:

1. That the defendants' appeal is allowed as prayed for.

(s.) HULBERT,
United States District Judge.

873

Dated: New York, N. Y., June 28, 1938.

874

Assignment of Errors.

UNITED STATES DISTRICT COURT,

SOUTHERN DISTRICT OF NEW YORK.

[SAME TITLE].

875

Now comes the defendants in the above-entitled cause and file the following assignment of errors on which they will rely upon their prosecution of the appeal in the above-entitled cause, from the decree made by this Honorable Court on or about the 26th day of April, 1938.

1. The District Court erred in holding claim 1 of Fullman Patent No. 1,769,947 valid.

2. The District Court erred in failing to hold claim 1 of Fullman Patent No. 1,769,947 invalid.

876

3. The District Court erred in holding that the extended elements of Casper Patent No. 1,279,256 do not bear upon and retain the bushing in place.

4. The District Court erred in holding that the bushing in the Casper device does not bear upon the armored cable but upon the conduit, thus drawing a distinction between armored cable and conduit.

5. The District Court erred in holding that in Perry Patent No. 1,585,688 the fingers are a part of the bushing and not a part of the connector.

6. The District Court erred in failing to hold that the fingers of Perry Patent No. 1,585,688 are a part of the

connector and bear upon the bushing to hold it in place and permit it to be visible.

7. The District Court erred in making any distinction between conduit and cable so far as the alleged invention of the patent in suit is concerned.

8. The District Court erred in failing to hold that the fingers projecting inwardly and the little niches in the mouth of the Fullman patent in suit, No. 1,769,947 are such trivial modifications that they do not amount to invention.

878

9. The District Court erred in holding that there is no proof in this case that any effort has been made to effect price control.

10. The District Court erred in failing to hold that the alleged commercial success of the patent in suit was due to price control.

11. The District Court erred in failing to hold that claim 1 of the Fullman patent No. 1,769,947 is only for an old and well known combination.

879

12. The District Court erred in failing to hold that as a matter of law there can be no contributory infringement of a patented combination simply by the sale of one element of the combination

- (a) when that element is a standard article of commerce,
- (b) to a buyer who never uses the element or the combination,
- (c) to a buyer who resells that element without using it;

880

Assignment of Errors.

(d) when there are at least eight other well known uses for the element.

13. The District Court erred in failing to hold that contributory infringement of a patented combination by the sale of one element thereof is not proved without proof that said element was used to complete the combination.

881

14. The District Court erred in failing to hold that there can be no infringement of Fullman Patent No. 1,769,947 by the manufacture or sale of the connectors described in that patent.

WHEREFORE, and for diverse other errors in the record of this cause appearing, defendants pray that the decree entered herein on or about the 26th day of April, 1938, be reversed in the above respects, and that the said District Court for the Southern District of New York be ordered to enter a decree in full accordance herewith.

882

DARBY & DARBY,
Solicitors for Defendants.

Dated: New York, N. Y., June 28, 1938.

Citation.

UNITED STATES DISTRICT COURT,

SOUTHERN DISTRICT OF NEW YORK.

 [SAME TITLE]

BY THE HONORABLE GEORGE MURRAY HULBERT, ONE OF THE
JUDGES OF THE DISTRICT COURT OF THE UNITED STATES
FOR THE SOUTHERN DISTRICT OF NEW YORK, IN THE
SECOND CIRCUIT,

884

TO: THE THOMAS & BETTS Co., and NATIONAL ELECTRIC
PRODUCTS CORPORATION, GREETINGS:

YOU ARE HEREBY CITED and admonished to be and appear before a United States Circuit Court of Appeals for the Second Circuit, to be holden at the Borough of Manhattan, in the City of New York, in the District and Circuit above named, on the 28th day of July, 1938, pursuant to an appeal and assignment of errors filed in the Clerk's office of the District Court of the United States for the Southern District of New York, wherein Electrical Fittings Corporation, Joselson Sales Corporation, Samuel Joselson and Belle Joselson are defendants and you are plaintiffs, to show cause, if any there be, why the errors in said appeal and assignment mentioned should not be corrected and speedy justice should not be done in that behalf.

885

GIVEN UNDER MY HAND at the Borough of Manhattan, in the City, County and State of New York, in the District and Circuit above named, this 28th day of June, in the year of our Lord One Thousand Nine Hundred and

886

Stipulation as to Contents of record.

Thirty-eight, and of the Independence of the United States the One Hundred and Sixty-second.

(S) HULBERT,

Judge of the District Court of the United States for the Southern District of New York, in the Second Circuit.

887

Stipulation as to Contents of Record.

UNITED STATES DISTRICT COURT,

SOUTHERN DISTRICT OF NEW YORK:

[SAME TITLE]

IT IS HEREBY STIPULATED between the attorneys for the parties hereto, subject to the approval of this Court, that the following enumerated papers shall constitute the transcript of record on appeal of this cause:

888

1. Bill of complaint.
2. Answer.
3. Waiver ~~of~~ treble damages by plaintiffs.
4. Plaintiffs' motion for bill of particulars (Plaintiffs' Exhibit 6).
5. Defendants' bill of particulars (Plaintiffs' Exhibit 7).
6. Stipulation concerning narrative statement of testimony.
7. Narrative statement of testimony.
8. Plaintiffs' exhibits as follows:
Exhibits 3, 4, 5, 8, 19, 31, 32.
9. Defendants' exhibits as follows:
Exhibits A, B, C, D, M.

10. Opinion of Judge Hulbert.
11. Final decree.
12. Stipulation that opinion of Court may be taken as compliance with Equity Rule 70½.
13. Defendants' petition for rehearing.
14. Stipulation concerning extracts from the minutes of the oral proceedings on defendants' petition for rehearing.
15. Extracts from the minutes of oral proceedings before Honorable Murray Hulbert, D. J., on April 23, 1938, on defendants' petition for rehearing.
16. Petition for appeal.
17. Order allowing appeal.
18. Assignment of errors.
19. Citation.
20. This stipulation.
21. Clerk's certificate.

890

IT IS FURTHER STIPULATED AND AGREED that the following exhibits are to be treated as physical exhibits and produced in Court at the argument of the appeal:

22. Plaintiffs' exhibits as follows:

Exhibits 1, 2, 9, 10, 11, 12, 16, 17, 20, 29, 30, 33, 34.

891

23. Defendants' exhibits as follows:

Exhibits E-1, E-2, F, J, K, O.

BOHLEBER & LEDBETTER,
Attorneys for Plaintiffs.

DARBY & DARBY,
Attorneys for Defendants.

IT IS SO ORDERED, August 16, 1938:

ROBERT P. PATTERSON,
U. S. D. J.

Dated, New York, New York, August 12th, 1938.

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Stipulation.**UNITED STATES DISTRICT COURT,****SOUTHERN DISTRICT OF NEW-YORK.**

**THE THOMAS & BETTS Co., a corporation,
and NATIONAL ELECTRIC PRODUCTS COR-
PORATION, a corporation,
Plaintiffs-Appellees,**

vs.

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**ELECTRICAL FITTINGS CORPORATION, a cor-
poration, JOSELSON SALES CORPORATION,
a corporation, and SAMUEL JOSELSON
and BELLE JOSELSON, individually,
Defendants-Appellants.**

It is hereby stipulated and agreed, that the foregoing is a true transcript of the record of the said District Court in the above-entitled matter as agreed on by the parties:

894 Dated, November , 1938.

**DARBY & DARBY,
Attorneys for Appellants.**

**BOHLEBER & LEDBETTER,
Attorneys for Appellees.**

Clerk's Certificate.

UNITED STATES OF AMERICA, }
 Southern District of New York, } ss.:

THE THOMAS & BETTS Co., a corporation,
 and NATIONAL ELECTRIC PRODUCTS COR-
 PORATION, a corporation,
 Plaintiffs-Appellees,

vs.

ELECTRICAL FITTINGS CORPORATION, a cor-
 poration, JOSELSON SALES CORPORATION,
 a corporation, and SAMUEL JOSELSON
 and BELLE JOSELSON, individually,
 Defendants-Appellants.

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I, CHARLES WEISER, Clerk of the District Court of the
 United States of America for the Southern District of
 New York, do hereby Certify that the foregoing is a cor-
 rect transcript of the record of the said District Court
 in the above-entitled matter as agreed on by the parties.

In testimony whereof, I have caused the seal of the
 said Court to be hereunto affixed, at the City of New
 York, in the Southern District of New York, this
 day of November, in the year of our Lord one thousand
 nine hundred and thirty-eight, and of the Independence
 of the said United States the one hundred and sixty-third.

897

(Seal)

CHARLES WEISER,
 Clerk.

[5783]

[fol. 300] IN THE UNITED STATES CIRCUIT COURT OF APPEALS
FOR THE SECOND CIRCUIT

Appeal No. —

THE THOMAS & BETTS Co. et al., Plaintiffs-Appellees,

vs.

ELECTRICAL FITTINGS CORPORATION et al., Defendants-
Appellants

NOTICE

Please Take Notice that on Monday November 14, 1938 at 10:30 in the forenoon, or as soon thereafter as counsel may be heard, plaintiffs-appellees will move to dismiss defendants-appellants appeal entitled as above upon the grounds set forth in the motion of plaintiffs-appellees herein, a copy of which motion is attached hereto.

Bohleber & Ledbetter, Attorneys for Plaintiffs-Appellees.

New York, N. Y., November 10, 1938.

To Messrs. Darby & Darby, 405 Lexington Avenue, New York, N. Y.

Service of the within and receipt of copy thereof is hereby acknowledged, this 10th day of November, 1938.

Darby & Darby, by Floyd H. Crews, Attorneys for Defendants-Appellants.

[fol. 301] IN THE UNITED STATES CIRCUIT COURT OF APPEALS
FOR THE SECOND CIRCUIT

Appeal No. —

THE THOMAS & BETTS Co., a Corporation, and NATIONAL
ELECTRIC PRODUCTS CORPORATION, a Corporation, Plaintiffs-Appellees,

vs.

ELECTRICAL FITTINGS CORPORATION, a Corporation; Joselson
Sales Corporation, a Corporation, and Samuel Joselson
and Belle Joselson, Individually, Defendants-Appellants

MOTION TO DISMISS

Now comes plaintiffs-appellees and move to dismiss defendants-appellants appeal in the above entitled case, on the

ground that the bill of complaint having been dismissed by the final decree of the District Court, thus denying plaintiffs' prayer for an injunction and an accounting, all equitable jurisdiction is ousted and defendants' appellants' appeal merely raises a moot or academic question of law with which this Court is not concerned.

Bohleber & Ledbetter, Solicitors for Plaintiffs-Appellees.

Dated November 10, 1938.

Facts

1. The above entitled appeal was docketed in this Court on November 9, 1938.

2. Plaintiffs' bill of complaint in this case was dismissed (a) as to contributory infringement, (b) for an injunction; [fol. 302] and (c) for an accounting, by His Honor Judge Hulbert, sitting in the U. S. District Court for the Southern District of New York as shown by the final decree, upon which this appeal is based, as set forth in the Transcript of the Record, page 276 Fol. 830.

3. In the Court below the defendants, appellants here, prayed for the dismissal of the bill of complaint on the ground (1) that the patent in suit is wholly void and invalid at law, and (2) that defendants did not infringe said patent, if valid; see defendants' answer Tr. p. 11. The bill of complaint was dismissed because the district Court was "not persuaded that the plaintiff has sustained the burden of proof" of infringement. See the opinion of the Court below, Tr. 259, at 273.

Law

Inasmuch as the bill of complaint in this case has been dismissed, and the fact that defendants admittedly do not have title to the patent in suit, and therefore no right to an injunction, based thereon, this Court is without equitable jurisdiction to hear and determine this case, and defendants-appellants in the circumstances are not in a position to maintain this appeal. Cf. *Peters Patent Corp. vs. Bates & Klink, Inc.*, 295 U. S. 392, 394; 79 L. Ed. 1498, 1500.

Where defendants sought to dismiss plaintiffs' bill of complaint on two counts, namely (1) invalidity of the patent

in suit, and (2) non-infringement, and have prevailed, albeit the Court's opinion is based upon only one of said grounds, namely, non-infringement, defendants have obtained full relief against the plaintiffs and are not entitled to insist, on [fol. 303] appeal that the *that the* decree should have been based on both grounds, and thus obtain a review of the determination of the validity of the patent. Cf. *P. E. Sharpless Co. vs. William A. Lawrence & Son* (C. C. A. 3) 208 Fed. 886.

In effect, defendants-appellants by their appeal are endeavoring to submit for judicial determination a "moot question of law" with which this Court is not concerned until the question is properly presented. In other words, as far as these defendants are concerned, having succeeded in dismissing plaintiffs' bill of complaint, all matters raised by the assignment of errors present purely academic questions. As recited by the Supreme Court in the recent case of *Triplett vs. Lowell* 80 L. Ed. 949, 956:

"We are not required to answer academic questions, or questions which may not arise in the pending controversy. See *White v. Johnson*, supra (282 U. S. 373, 75 L. ed. 394, 51 S. Ct. 115); *United States v. Hall* 131 U. S. 50, 33 L. ed. 97, 9 S. Ct. 663, supra; *Webster v. Cooper*, 10 How. 54, 55, 13 L. ed. 325, 326."

Bohleber & Ledbetter, Solicitor- for Plaintiffs-Appellees. (Sgd.) Wm. Bohleber, Francis H. Fassett, of Counsel.

Dated New York, N. Y., November 10, 1938.

[fol. 303½] [Endorsed:] United States Circuit Court of Appeals for the Second Circuit. The Thomas & Betts Co., a corporation; and National Electric Products Corporation, a corporation, Plaintiffs-Appellees, vs. Electrical Fittings Corporation, a corporation; Joselson Sales Corporation, a corporation, and Samuel Joselson and Belle Joselson, individually, Defendants-Appellants. Appeal No. —. Notice and Motion to Dismiss. Law Offices of Bohleber & Ledbetter, 15 Park Row, New York.

[fol. 304] UNITED STATES CIRCUIT COURT OF APPEALS FOR
THE SECOND CIRCUIT

Equity. No. 81/229

THE THOMAS & BETTS CO. and NATIONAL ELECTRIC PRODUCTS
CORPORATION, Plaintiffs-Appellees,

vs.

ELECTRICAL FITTINGS CORPORATION, JOSELSON SALES CORPORATION,
and SAMUEL JOSELSON and BELLE JOSELSON, Defendants-Appellants

NOTICE

Please Take Notice that on Monday, November 14, 1938, at 10:30 o'clock in the forenoon, or as soon thereafter as counsel can be heard, the attached motion will be presented to the Court hearing motions at the United States Court House, Foley Square, New York, New York.

Yours, &c., Darby & Darby, Floyd H. Crews, Attorneys for Defendants-Appellants.

Dated, New York, New York, November 10, 1938.

To Messrs. Bohleber & Ledbetter, Attorneys for Plaintiffs-Appellees, 15 Park Row, New York, New York.

Copy of this notice with motion and affidavit in support thereof received this 10th day of November, 1938.

Bohleber & Ledbetter, Attorneys for Plaintiffs-Appellees.

[fol. 305] UNITED STATES CIRCUIT COURT OF APPEALS FOR
THE SECOND CIRCUIT

Equity. No. 81/229

THE THOMAS & BETTS CO. and NATIONAL ELECTRIC PRODUCTS
CORPORATION, Plaintiffs-Appellees,

vs.

ELECTRICAL FITTINGS CORPORATION, JOSELSON SALES CORPORATION,
and SAMUEL JOSELSON and BELLE JOSELSON, Defendants-Appellants

MOTION

Now Come appellants, and on the annexed affidavit of Floyd H. Crews move to remand the case to the District

Court with instruction to vacate the decree entered in this cause on April 27, 1938 holding claim 1 of Letters Patent No. 1,769,947 valid and claim 2 thereof invalid; and to enter a decree holding the said patent in its entirety to be invalid because of violation of Section 4922 of the Revised Statutes.

And appellants further move that all costs in the cause, both in this Court and in the District Court, be taxed against the plaintiffs.

Electrical Fittings Corporation, Joselson Sales Corporation, Samuel Joselson, Belle Joselson, Appellants, by Darby & Darby, Floyd H. Crews, Attorneys for Appellants.

Dated November 10, 1938.

[fol. 306] UNITED STATES CIRCUIT COURT OF APPEALS FOR
THE SECOND CIRCUIT

Equity. No. 81/229

THE THOMAS & BETTS CO. and NATIONAL ELECTRIC PRODUCTS
CORPORATION, Plaintiffs-Appellees,

VS.

ELECTRICAL FITTINGS CORPORATION, JOSELSON SALES CORPORATION, and SAMUEL JOSELSON and BELLE JOSELSON, Defendants-Appellants.

AFFIDAVIT IN SUPPORT OF MOTION

STATE OF NEW YORK,

County of New York, ss:

Floyd H. Crews, being duly sworn, deposes and says as follows:

I am an attorney at law and a member of the firm of Darby and Darby, attorneys for the appellants in the above-entitled cause and am familiar with the proceedings had in the said cause.

The case is a patent infringement suit charging infringement of claims 1 and 2 of Letters Patent No. 1,769,947 and was tried before Judge Hulbert.

On March 22, 1938 Judge Hulbert rendered his opinion holding claim 1 of the patent to be valid and claim 2 of the patent to be invalid.

On April 27, 1938 a final decree to that effect was filed. Appellants filed a petition for appeal on June 28, 1938, and the order allowing the appeal was entered on that date. [fol. 307] The plaintiffs below have taken no appeal from the holding of invalidity of claim 2 of the patent.

On June 2, 1938, the plaintiff National Electric Products Corporation signed a disclaimer of claim 2 of said patent No. 1,769,947.

On June 6, 1938, the plaintiff Thomas & Betts Company, exclusive licensee under said patent, signed said disclaimer, indicating its acquiescence therein.

The said disclaimer was forwarded to the Patent Office and received there on July 26, 1938, without the statutory fee required by Section 4934 R. S. U. S. (U. S. C. Title 35, Sec. 78).

On August 19, 1938, the disclaimer fee was paid and the disclaimer was filed and recorded on that date.

It will thus be seen that the events just referred to occurred in the following sequence and each the number of days shown after Judge Hulbert's decision:

Judge Hulbert's decision—March 22, 1938.

Final decree—April 27, 1938—36 days after decision.

Disclaimer signed by patent owner—June 2, 1938—72 days after decision.

Disclaimer signed by exclusive licensee—June 6, 1938—76 days after decision.

Disclaimer received at Patent Office without fee—July 26, 1938—126 days after decision.

Fee paid and disclaimer filed and recorded—August 19, 1938—150 days after decision and 114 days after final decree.

The notice of the disclaimer above referred to was not carried in the Official Gazette of the United States Patent Office until the issue of September 6, 1938. Immediately [fol. 308] upon seeing that notice of disclaimer, namely, on September 8, 1938, I prepared and served upon the attorneys for the appellees a motion to vacate the decree and enter a new decree holding the patent in its entirety to be invalid because of violation of Section 4922 of the Revised Statutes, and suspended further preparation of the appeal papers at that time to avoid any further expense to either party. That motion was heard by Judge Hulbert who dis-

missed it on the ground that he was without jurisdiction, having already signed the petition for appeal. A copy of Judge Hulbert's opinion is attached hereto.

Floyd H. Crews.

Sworn to and subscribed before me this 10th day of November, 1938. Rose A. Batterman, Notary Public. (Seal.)

[fol. 309]

#967

UNITED STATES DISTRICT COURT, SOUTHERN DISTRICT OF
NEW YORK

No. 81-229

THE THOMAS & BETTS CO. and NATIONAL ELECTRIC PRODUCTS
CORPORATION, Plaintiffs,

vs.

ELECTRICAL FITTINGS CORPORATION, JOSELSON SALES CORPORATION,
and SAMUEL JOSELSON and BELLE JOSELSON, Defendants

OPINION

Bohleber & Ledbetter, Esqs., Solicitors for Plaintiffs,
15 Park Row, New York City.

William Bohleber, Esq., Francis H. Fassett, Esq., of
Counsel.

Darby and Darby, Esqs., Solicitors for Defendants, 405
Lexington Ave., New York City.

Samuel E. Darby, Jr., Esq., Floyd H. Crews, Esq., of
Counsel.

HULBERT, D. J.:

[fol. 310]. This action was tried and decided March 22nd,
1938.

The patent in suit was held valid as to claim 1 and invalid
as to claim 2. Rehearing, upon application of the defendants,
was denied April 23rd, 1938 (23 Fed. Supp. 920).

Final decree was entered April 27, 1938. The defendants
submitted an assignment of errors and petition praying
leave to appeal, on which an order dated June 28, 1938

was made and filed June 30, 1938. No appeal was taken by the plaintiffs and the record is now in galley proof.

Under the early accepted general rule a patent with an invalid claim was wholly void but over 100 years ago the Congress gave relief to protect the valid part of a patent containing an invalid claim if the patentee disclaimed the invalid part without unreasonable neglect or delay. (Act of March 3, 1837 which, with slight modifications now constitutes Sections 4917 and 4922 Revised Statutes (Secs. 65 and 71 Title 35 U. S. C. A.)

The official Gazette of the United States Patent Office in its issue of September 6th, 1938, discloses that on August 19, 1938 a disclaimer of the invalid claim 2 was recorded. This was 150 days after the decision and 114 days after the entry of the final decree thereon, but within 30 days after the expiration of the time allowed the plaintiffs to have perfected an appeal, had they chosen to do so.

It appears that the disclaimer was signed and acknowledged by one of the plaintiffs on June 2, 1938 and by the other on June 6, 1938, and received at the Patent Office on [fol. 311] July 26, 1938 but was unaccompanied by the statutory filing fee, which was not paid until August 19, 1938. It may be that the plaintiffs can establish sufficient excuse to justify this delay.

But the preliminary question is whether the Court has the power to entertain the application.

The allowance of the appeal terminated the power of this Court to do any act with respect to its decree without leave of the Circuit Court of Appeals, to which the appeal has been taken, except, of course, ministerial acts in connection with the preparation of the record on appeal, and the exercise of inherent power to enforce its mandate. But the Court is not without recourse to do justice in a proper case and the accepted practice in a situation such as is now present would seem to be to apply to the Appellate Court to have the case remitted if the trial judge felt that substantial justice so required. *Baltimore S.S. Co. v. Phillips*, 9 Fed. (2) 902.

The disclaimer statutes above referred to:

“enact that where a patentee claims materially more than that which he was the first to invent, his patent is void, unless he has preserved the right to disclaim the surplus; and that he may fail to preserve the right, by unreasonable

neglect or delay to enter a disclaimer in the Patent Office." Walker on Patents, 6th Ed., Sec. 254.

In *Ensten v. Simon Ascher & Co.*, 282 U. S. 445, the Court in reviewing the disclaimer statute, said:

"The statute is remedial; the intent is to aid the inventor free from wilful default or intention to mislead the public by permitting him to avoid the consequence of inadvertence, accident or mistake through prompt disavowal of the apparent right to exclude others from something improperly included in the words of his grant. Escape is permitted only to one who acted originally in good faith and who has complied with the prescribed conditions. The same principle which [§ 312] forbids a patentee to assert a right to more than he has actually invented compels him to disavow the right as soon as he discovers that it has been unjustly claimed. Unreasonable delay in disclaiming is thus tantamount to an original fraudulent claim, and through it the patentee loses the privilege of making the amendment by which alone his patent could be saved." * * *

"In cases where the excess is not apparent at once upon the inspection of the patent by the patentee, the allowance of his claim by the Patent Office raises such a presumption in its favor that he may rely on its validity until a court of competent jurisdiction decides that it is broader than his real invention."

There is no general rule which specifically defines "unreasonable neglect or delay."

The defendants cite, *inter alia*, and rely upon *Railway Engineering E. Co. v. Oregon Short Line R. Co.*, 79 Fed. (2) 469.

In that case the District Judge rendered and filed a written opinion July 5, 1934 and a decree was signed and filed Aug. 25, 1934. On Nov. 22nd appellant filed its petition for appeal and its assignment of errors but the appeal was not lodged in the Circuit Court until April 1, 1935, whereupon the appellee filed a motion to dismiss on the ground that the alleged errors of the trial court had become moot questions because appellant-plaintiff unreasonably neglected and delayed appealing or to enter disclaimers following the decision. 51 days elapsed from the rendition of the opinion of the District Judge before final decree

was entered; 140 days elapsed after decision before appeal was asked and allowed, and 89 days elapsed between the entry of the decree and filing petition for appeal and its allowance. The Court held the neglect and delay unreasonable.

Judge MacDermott, in a dissenting opinion in *Railway [fol. 313] Engineering E. Co. v. Oregon Short Line R. Co.*, *supra*, said:

"I agree that three months is not needed to determine whether an appeal should be taken, but I think a definite and certain shorter period should be prescribed for the future only. . . ."

"In the long history of the disclaimer statute, no patent ever before has been held void because an appeal was not taken prior to the expiration of the statutory period. On the contrary, courts frequently have said that disclaimers must be filed within a reasonable time—generally 30 days—after the statutory time for appeal or application for certiorari has expired.

"The trend of the times is very strongly toward expediting litigation, a trend with which I am heartily in accord. But it does not make for expedition to substitute an indefinite standard of reasonable promptness for a specific period fixed by statute."

There is a lack of uniformity in the divers circuits. The rule in our own Circuit referred to by Judge Coleman in *General Chemical Co., v. Standard W. P. & Acid Works*, 8 Fed. Supp. 265 (D. C. Md.) as the "thirty day rule" or "the New York rule" is that the filing of a disclaimer within 30 days after the time to appeal has expired, is not unreasonable, and certainly if a party has 90 days within which to appeal it does not seem logical that he should be required to give up this statutory right and file his disclaimer.

In the instant case the plaintiffs manifested their intention to disclaim early in June. It may have been that pending presentation of the disclaimer to the Patent Office they were still considering whether they would appeal. The disclaimer was in the Patent Office on July 26, 1938 although the statutory filing fee was not paid until Aug. 19, 1938. All of which bears on the question of good faith.

[fol. 314] The Court is disinclined to request the Appellate Court to authorize it to reopen the case and remit the

record for that purpose. If the defendants succeed in their appeal the hearing now sought will become moot. If they fail, they may still raise the issue if and when suit is brought against them for infringement or against any customer whom they may feel obligated to defend.

Settle order on two days' notice.

Dated Nov. 1st, 1938.

Hulbert, U. S. D. J.

[fol. 315] UNITED STATES CIRCUIT COURT OF APPEALS FOR THE
SECOND CIRCUIT

Equity. No: 81-229

THE THOMAS & BETTS Co., a Corporation, and NATIONAL
ELECTRIC PRODUCTS CORPORATION, a Corporation, Plain-
tiffs-Appellees,

vs.

ELECTRICAL FITTINGS CORPORATION, a Corporation; JOSELSON
SALES CORPORATION, a Corporation, and Samuel Joselson
and Belle Joselson, Individually, Defendants-Appellants

AFFIDAVIT OF SAMUEL JOSELSON

STATE OF NEW YORK,

County of New York, ss: .

Samuel Joselson being duly sworn deposes and says:

I am the Samuel Joselson who is a defendant-appellant in the above entitled proceeding, and am an officer of each of the two corporations which are defendants-appellants in that proceeding, and the husband of Belle Joselson, who is the only other defendant-appellant in that proceeding.

Attached to this affidavit is a letter which was received by me by registered mail on Saturday, November 26, 1938, from the Thomas & Betts Co., a plaintiff-appellee herein.

Samuel Joselson.

Sworn to and subscribed before me this 28th day of
November, 1938. Rose A. Batterman, Notary
Public. (Seal.)

(Here follows one photolithograph, side folio 316)

TELEPHONES: { N. Y. - BARELAY TOLLAGE
ELIZABETH 2-1000-1-2

CABLE ADDRESS: "THOMAS & BETTS"

THE THOMAS & BETTS CO.
GENERAL SALES OFFICE AND FACTORY
36 BUTLER STREET
ELIZABETH, N. J.

ROBERT MCKEAN THOMAS, E. E., PRES.
GEORGE C. THOMAS, JR., VICE PRES. & TREAS.
ADNAH MCMURTRIE, E. E., MGRY.
H. J. MAC DONALD, SALES MANAGER

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PRIOR AGREEMENTS OR SAUCES BEYOND OUR CONTROL

GEORGE WHITEFIELD BETTS, JR., GENERAL COUNSEL

CONNECTORS, BUSHINGS, LOCUTS, CLAMPS, COUPLERS, EXTENSION, HANGERS, HOPLIN, REDUCERS, STRAPS, SUPPORTS, GRIPPING DEVICES, FLOOR EGGS,
CAST JUNCTION AND PULL BOXES, SERVICE ENTRANCE FITTINGS, PICTURE SUPPORTS, FISH WIRE AND REMOVAL TOOLS FOR BIRD, LIGHT WALL
AND FLEXIBLE CONDUIT, AND FOR ARMORED, NON-INSTALLING AND ENTRANCE CABLES AND OTHER WIRING SYSTEMS.

TUBULETS, VAPOR-PROOF FITTINGS, COLLECTOR CABLE CONNECTORS, LUGS, TIES, ELLS, ETC.

November 25, 1938

Electrical Fittings Corporation,
863 Broadway,
New York City.

Gentlemen:

We enclose herewith a copy of reissued patent
#20,873 of Fulliman patent #1,769,947.

You will notice that claim 2 of the original
patent has been disclaimed and that two additional claims
have been added, both of which are broader than the
original claim 1.

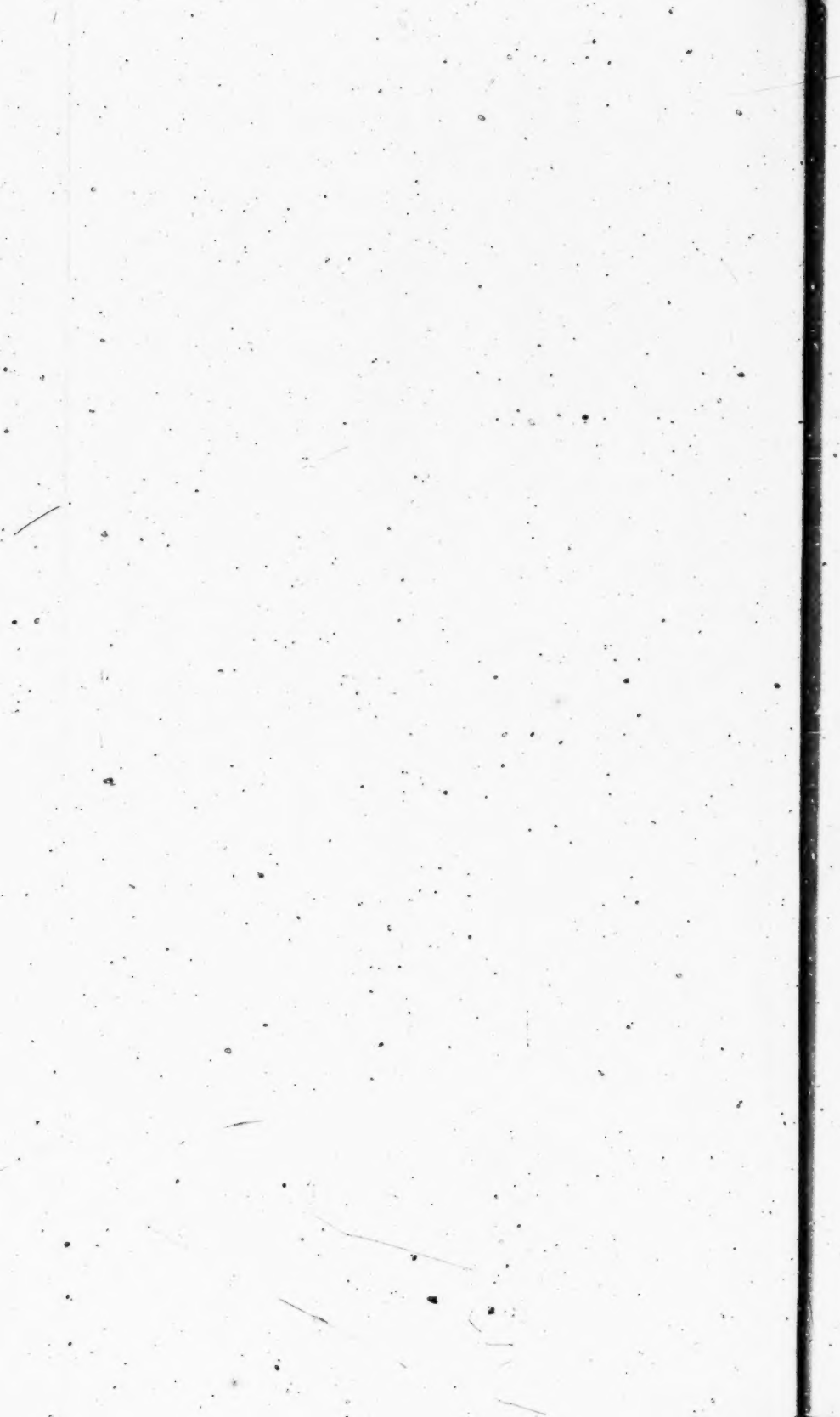
We hereby demand that you purchase connectors
embodying the improvements claimed and described in this
reissued patent from licensees of this company only.

Yours very truly,

THE THOMAS & BETTS CO.

Adnah McMurtrie

Adnah McMurtrie
Secretary.



[fol. 317] UNITED STATES CIRCUIT COURT OF APPEALS FOR THE
SECOND CIRCUIT

THE THOMAS & BETTS CO., and NATIONAL ELECTRICAL
PRODUCTS CORPORATION, Plaintiffs-Appellees,

against

ELECTRICAL FITTINGS CORPORATION, JOSELSON SALES CORPORATION,
and SAMUEL JOSELSON and BELLE JOSELSON, Defendants-Appellants

Decided Dec. 12, 1938

Before: L. Hand, Swan and Chase, Circuit Judges

On motion by the plaintiffs to dismiss an appeal and on motion by the defendants to remand to the District Court with instructions.

Bohleber & Ledbetter, Attorneys for Plaintiffs-Appellees;
William Bohleber, Francis H. Fasset, of Counsel.

Darby & Darby, Attorneys for Defendants-Appellants;
Samuel E. Darby, Jr., Floyd H. Crews, of Counsel.

CHASE, Circuit Judge:

The plaintiffs brought the usual action in equity against the defendants in the District Court for the Southern District of New York charging infringement of claims 1 and 2 of the United States Patent No. 1,769,947 granted to Fullman.

After hearing, the court held claim 1 of the patent valid but not infringed and claim 2 invalid. A final decree to this effect with a consequent dismissal of the bill of complaint [fol. 318] was entered April 27, 1938. The plaintiffs took no appeal from the decree but on June 28, 1938 the defendants filed a petition for appeal and an order allowing their appeal was made by the District Court the same day.

On August 19, 1938, a disclaimer of claim 2 was filed. The defendants, insisting that the plaintiffs unreasonably delayed or neglected to file their disclaimer contrary to the provisions of Sec. 4922 R. S. (35 U. S. C. A. Sec. 65, 71) moved to have the cause remanded to the District Court with directions to enter a decree holding the entire patent invalid. The plaintiffs have moved to dismiss the appeal.

The plaintiffs' motion to dismiss the appeal of the defendants is based on the ground that the appeal can raise no questions not already moot because of the fact that the defendants have already been granted in the dismissal of the bill all the relief to which they are entitled. The defendants reply that as claim 1 was held valid they will be deprived in any subsequent litigation of their right to contest its validity since by this decree that will have become *res adjudicata* and so they are prejudiced by the decree. They have found some support for their claim of right to appeal in *Oliver Sherwood Co. v. Patterson-Ballagh Corporation*, 95 F. (2) 71 (C. C. A. 9). Perhaps that decision may be somewhat distinguished on the facts but, however that may be, we cannot hold that under this decree the defendants are estopped from contesting again the validity of that claim. The reason is that the validity of [fol. 319] claim 1 was in no sense necessary to support the decree dismissing the bill. Indeed, the dismissal of the bill followed notwithstanding the findings on which claim 1 was held valid. Thus it appears that the defendants have already received all the relief they can obtain in this action and they have no right to contend further that it should have been based in part upon the invalidity of claim 1 instead of upon the failure of the plaintiffs to prove infringement of that claim. *New Orleans v. Emsheimer*, 181 U. S. 153; *P. E. Sharpless Co. v. William A. Lawrence & Son*, 208 Fed. 886.

In so far as the decree itself is thought to establish the validity of claim 1 and to foreclose the right of the defendants to contest the validity of that claim in any subsequent action on the patent there seems to have been a misconception of its possible scope. It merely established that there was no equity in the bill which entitled the plaintiffs to any relief whatever regardless of whether claim 1 was valid or not. That left the losing plaintiffs in no better position in respect to the patent than they were at the time they brought the suit and the successful defendants in no worse. A party may not appeal from a decree, which terminates in his favor the entire cause of action sued on, merely to obtain a review of findings which he believes erroneous but which are unnecessary to support the decree. *Lindheimer v. Illinois Bell Co.* 292 U. S. 151, 176; *New York Telephone Co. v. Maltbie*, 291 U. S. 645.

Since the appeal must be dismissed for the reasons stated, the motion of the defendants must be denied without consideration on the merits.

Motion to dismiss the appeal granted.

Filed Dec. 12, 1938.

[fol. 321] UNITED STATES CIRCUIT COURT OF APPEALS, SECOND
CIRCUIT

At a stated term of the United States Circuit Court of Appeals, in and for the Second Circuit, held at the United States Court House, in the City of New York, on the 29th day of December, one thousand nine hundred and thirty-eight.

Present: Hon. Learned Hand, Hon Thomas W. Swan, Hon. Harrie B. Chase, Circuit Judges.

THOMAS & BETTS Co., and Another, Plaintiffs-Appellees,

vs.

ELECTRICAL FITTINGS CORPORATION et al., Defendants-Appellants

A motion having been made by counsel for the appellees to dismiss the appeal herein;

Upon consideration thereof it is

Ordered that said appeal be and hereby is dismissed with costs

Further ordered that a mandate issue accordingly.

Wm. Parkin, Clerk.

[fol. 322] [Endorsed:] United States Circuit Court of Appeals, Second Circuit. Thomas & Betts Co. and Another vs. Electrical Fittings Corp., et al. Order. United States Circuit Court of Appeals, Second Circuit. Filed Dec. 29, 1938. William Parkin, Clerk.

[fol. 323] UNITED STATES OF AMERICA,
Southern District of New York:

I, William Parkin, Clerk of the United State Circuit Court of Appeals for the Second Circuit, do hereby certify that the

foregoing pages, numbered from 1 to 322 inclusive, contain a true and complete transcript of the record and proceedings had in said Court, in the case of Thomas & Betts Co. and Another, Plaintiffs-Appellees, against Electrical Fittings Corporation et al., Defendants-Appellants, as the same remain of record and on file in my office.

In Testimony Whereof, I have caused the seal of the said Court to be hereunto affixed, at the City of New York, in the Southern District of New York, in the Second Circuit, this twenty-ninth day of December, in the year of our Lord one thousand nine hundred and thirty-eight, and of the Independence of the said United States the one hundred and sixty-third.

Wm. Parkin, Clerk. (Seal United States Circuit Court of Appeals, Second Circuit.)

[fol. 324] SUPREME COURT OF THE UNITED STATES

ORDER ALLOWING CERTIORARI—Filed February 13, 1939

The petition herein for a writ of certiorari to the United States Circuit Court of Appeals for the Second Circuit is granted.

And it is further ordered that the duly certified copy of the transcript of the proceedings below which accompanied the petition shall be treated as though filed in response to such writ.

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